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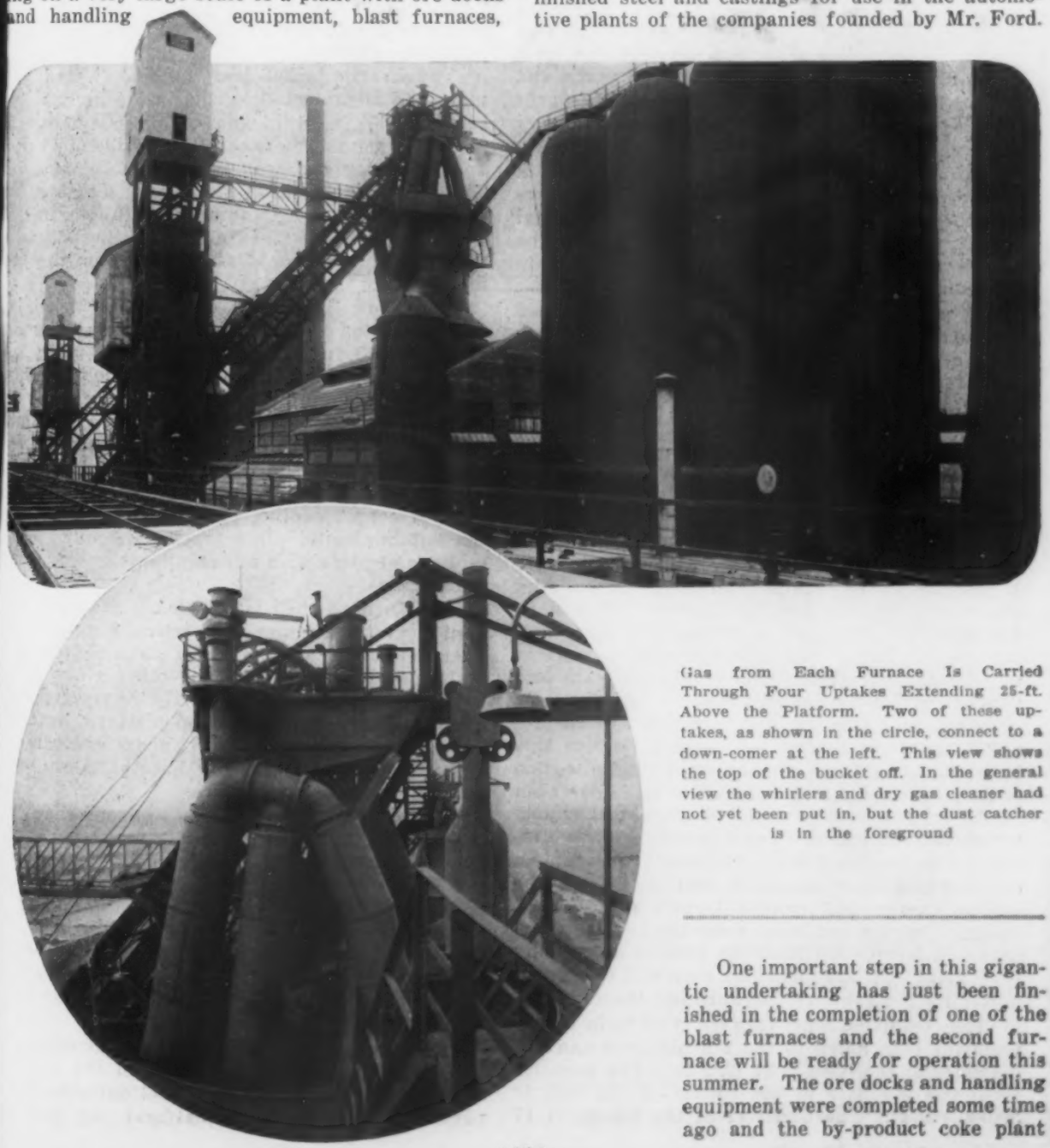
Making Ore Pile Part of Automobile Plant

The Plan of Henry Ford to Pour Castings Direct from the Blast Furnace Taking Form—Cupolas Not Entirely Eliminated and Foundry Will Have Eighteen

BY F. L. PRENTISS

HENRY FORD'S ambition to start with the ore in building automobiles is approaching a realization. His plan involved the building on a very large scale of a plant with ore docks and handling equipment, blast furnaces, coke plant and foundry and, eventually, steel works, all combined in one large enterprise and providing all the manufacturing processes for making finished steel and castings for use in the automotive plants of the companies founded by Mr. Ford.



Gas from Each Furnace Is Carried Through Four Uptakes Extending 25-ft. Above the Platform. Two of these uptakes, as shown in the circle, connect to a down-comer at the left. This view shows the top of the bucket off. In the general view the whirlers and dry gas cleaner had not yet been put in, but the dust catcher is in the foreground

One important step in this gigantic undertaking has just been finished in the completion of one of the blast furnaces and the second furnace will be ready for operation this summer. The ore docks and handling equipment were completed some time ago and the by-product coke plant

was placed in operation in the fall of 1919.

The new Ford works are known as the River Rouge plant of the Ford Motor Co., being a part of the organization. The site covers several thousand acres just outside of the western limits of Detroit on the Rogue River, three miles from the junction of that river with the Detroit River. Ground was broken for the plant three years ago but work was largely suspended during the war owing to the difficulty of obtaining material. Attention was centered, during the war, on the erection and operation on the same site, of a shipbuilding plant for the Government in which the submarine chasers known as the "Eagles" were built for the Navy Department. With the completion of the Government contract, the Eagle plant has been converted into an automobile body building plant. Work on the two blast furnaces was started in September, 1918, and piling is now being driven for the two additional blast furnaces originally contemplated. The erection of one of these furnaces will probably be started late this year. No definite plans have been announced as yet for the proposed steel plant.

A predominating feature of the blast furnaces, and in fact of the whole plant, is that no expense has been spared in construction. The design of the furnaces provided for the heaviest and most substantial type of construction for all parts, and the engineers have aimed to make the furnaces and the equipment complete and modern in every particular.

More than usual interest has been taken in the Ford blast furnaces because of the announcement that the company planned to pour hot metal directly from the furnaces to the molds in the foundry, eliminating remelting the pig iron in the foundry cupolas. Mr. Ford, believing that this could be accomplished, some time ago set his engineering and foundry departments to work on the metallurgical problems involved. Under the process as it has been worked out cupolas will not be eliminated entirely but the metal from the blast furnaces and metal from the cupolas will be mixed in definite proportions and it is stated that tests have proved that high grade castings possessing all the qualities required for machining will be produced by this process.

The foundry is now in construction but is not expected to be ready for operation before fall. It will be of very large capacity, the building being 1188 ft. long and 660 ft. wide. It will be equipped with 18 cupolas arranged in three batteries of six each. Metal from the blast furnaces will be taken to the foundry in ladle cars and poured outside the foundry wall in a 30-ton ladle or hot metal container, one of which will be provided for each battery of cupolas. From this ladle, 1500 to 2000 lb. of the furnace metal will be poured into a foundry ladle and the ladle taken to the cupola and the required amount of cupola metal will be added. Track scales will be provided for weighing both the blast furnace and cupola metal as it is poured into the ladle. The cupola charge will consist largely of scrapped castings, sprues and gates from the foundry, borings and scrap steel from the present automobile body plant. A large machine shop will be erected adjoining the foundry for finishing the castings.

The completed blast furnace is 92 ft. in height from the iron notch to the top platform and the diameter at the bosh is 22 ft. 9 in. The capacity from the tap hole to the bottom of the bell is 32,000 cu. ft. The diameter at the hearth is 17 ft. and at the stock line 16 ft. 6 in. The angle of the bosh is 78 deg. 11 min. The lining is 3 ft. in thickness in the shell, being reduced to 27 in. at the bosh. Besides the bosh cooling plates there are 11 rows of plates above the mantel, these being carried one half way up the inwall above the mantel. These are set back approximately 18 in. from the inside lining. The stock line is protected by wearing plates. These are heavy cast iron sections 8 ft. high and they are water cooled by means of cooling pipes cast in the cast iron section.

The foundation of the furnace is a concrete mat 8 ft. in thickness laid on piling and above this mat is a brick foundation 9 ft. 8 in. in thickness. The columns and column bases are anchored to the foundation with anchor bolts. The base plates are spaced in a circle by heavy cast iron distance pieces and bolts to hold them in alignment. There are six hollow cast iron columns and the diameter of the column circle is 30 ft. The average column diameter is 24 in. The circle pipe rests on the mantel and the bustle pipe is suspended from the mantel by vertical rods running through cast steel brackets riveted to the bustle pipe. The bustle pipe is 2 ft. 9 in. in diameter inside the brick work and 4 ft. 7 in. inside the shell.

The hearth jacket is a 1½ in. riveted steel plate and is protected on the inside by cast iron segments 4½ in. in thickness, pipe coils being cast in the segments. Between the outside steel plate and the inner cast iron plates is 4 in. of groat. The hearth jacket is 24 ft. 4 in. in diameter and 10 ft. 9 in. high, extending from approximately 2 ft. above the cast house floor to the bottom of the column bases or 6 ft. 7 in. below the iron notch.

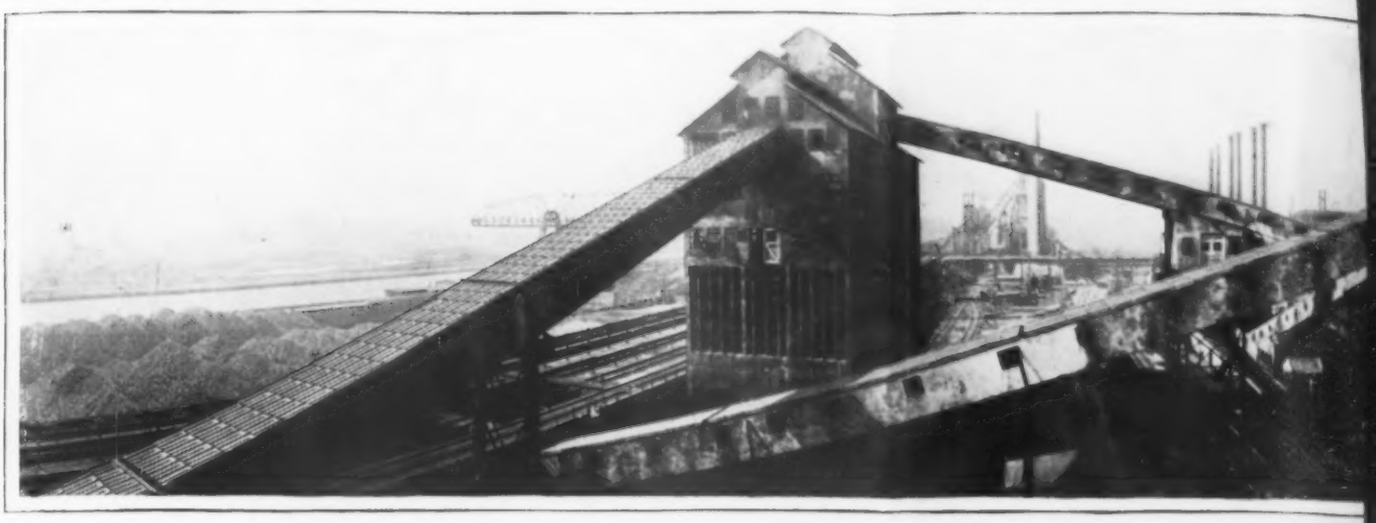
There are 12 tuyeres. The tuyere jacket is a 1¼ in. riveted steel plate 21 ft. 6 in. in diameter and 4 ft. 10 in. wide. The tuyere jacket and hearth walls are cooled by copper cooling plates.

The bosh is reinforced with five heavy steel butt strap bands above the tuyere jacket, these being 12 in. wide and 1¼ in. thick, supported by cast steel brackets from the tuyere jacket, making a self-supporting unit. The bosh is cooled by nine rows of copper cooling plates. The mantel is of the flat horizontal plate type, being built up of sections of plate with stiffening angles and heavy built straps.

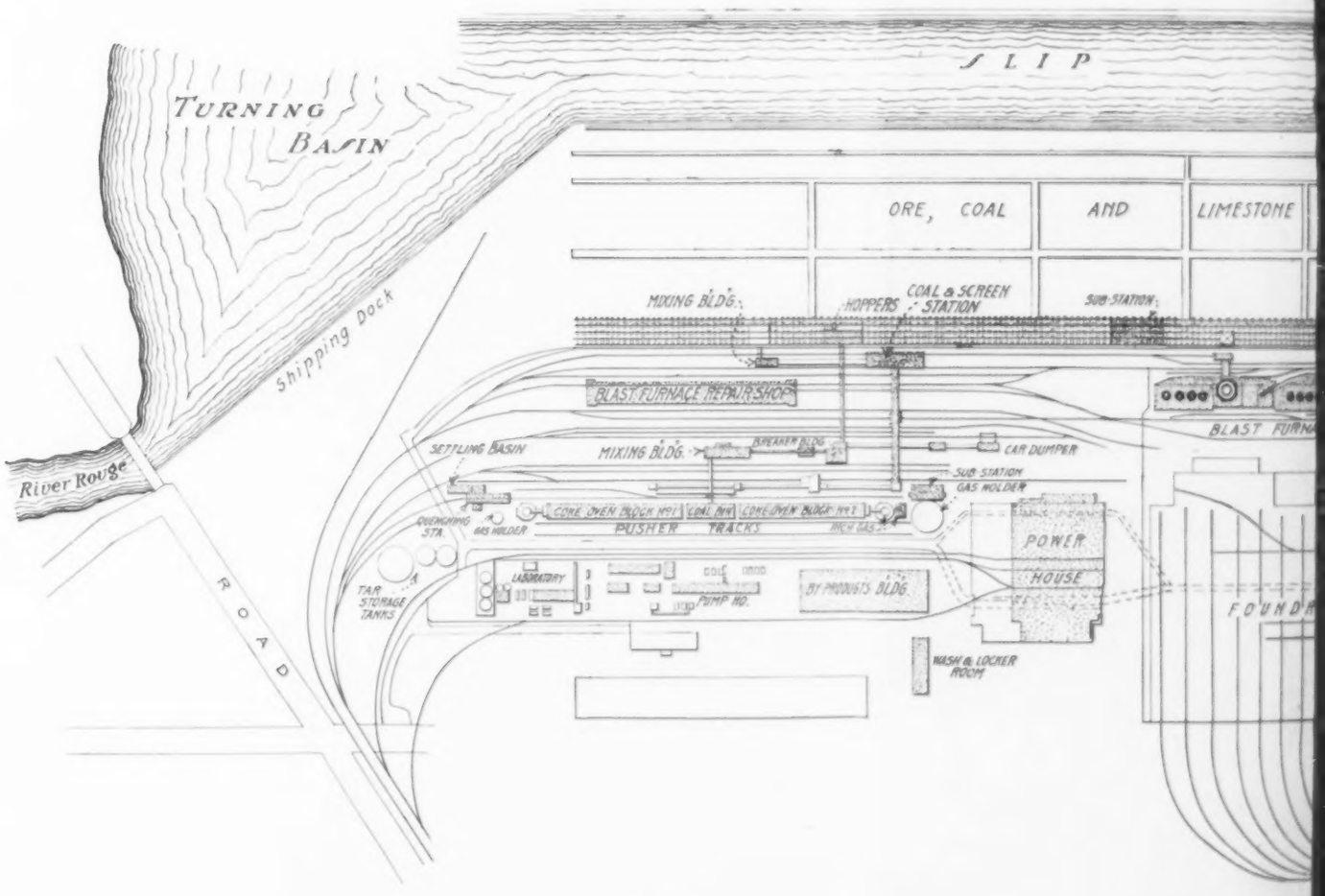
The furnace shell is built of ¾ in. plate with double riveted butts on the vertical seam and single riveted taps on the girth. The bottom ring is 1 in. in thickness and the other rings ¾ in. thick. The top ring is heavily reinforced with angles to take care of the top platform brackets. Several railings placed 6 ft. apart encircle the furnace starting above the hearth, these being provided as a safety measure.

The shell is surmounted by Kennedy cone type top. At the top of the cone is a cast steel saddle made in four sections. This saddle carries the top hopper which is a solid steel casting. The hopper is 13 ft. in diameter at the top and 11 ft. 6 in. at the bottom and 6 ft. deep. The bell is 12 ft. 3 in. in diameter and the angle of the bell is 53 deg. The large bell is hung on a cross-head which is supported by two rods operated by a hydraulic cylinder.

There is a change from the usual design of Kennedy top in the arrangement of the uptakes. Instead of having four cast steel outtake elbows running down under the platform, the four up-



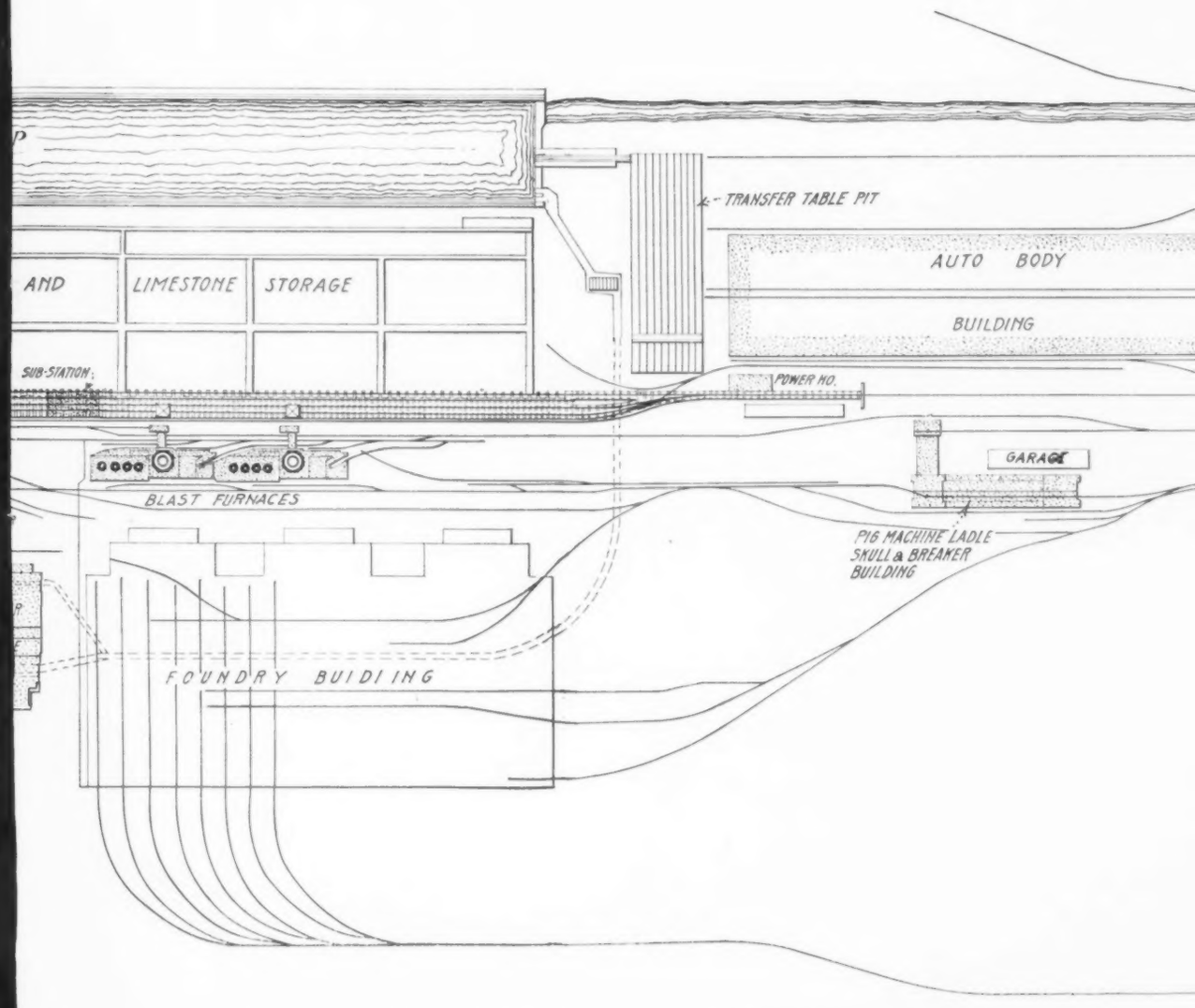
The reproduction of the panoramic photograph makes conspicuous the pre
received and the adjoining storage yard of the mat



The map shows the nearby location of the foundry building to the blast furna
The foundry building will contain cupolas, and casting will be done with a mi
for the progressive assembly of the Eagles, the submarine chasers which wer
transfer table pit over which the completed hulls wer

The Beginnings, on the River Rouge, near Detroit,

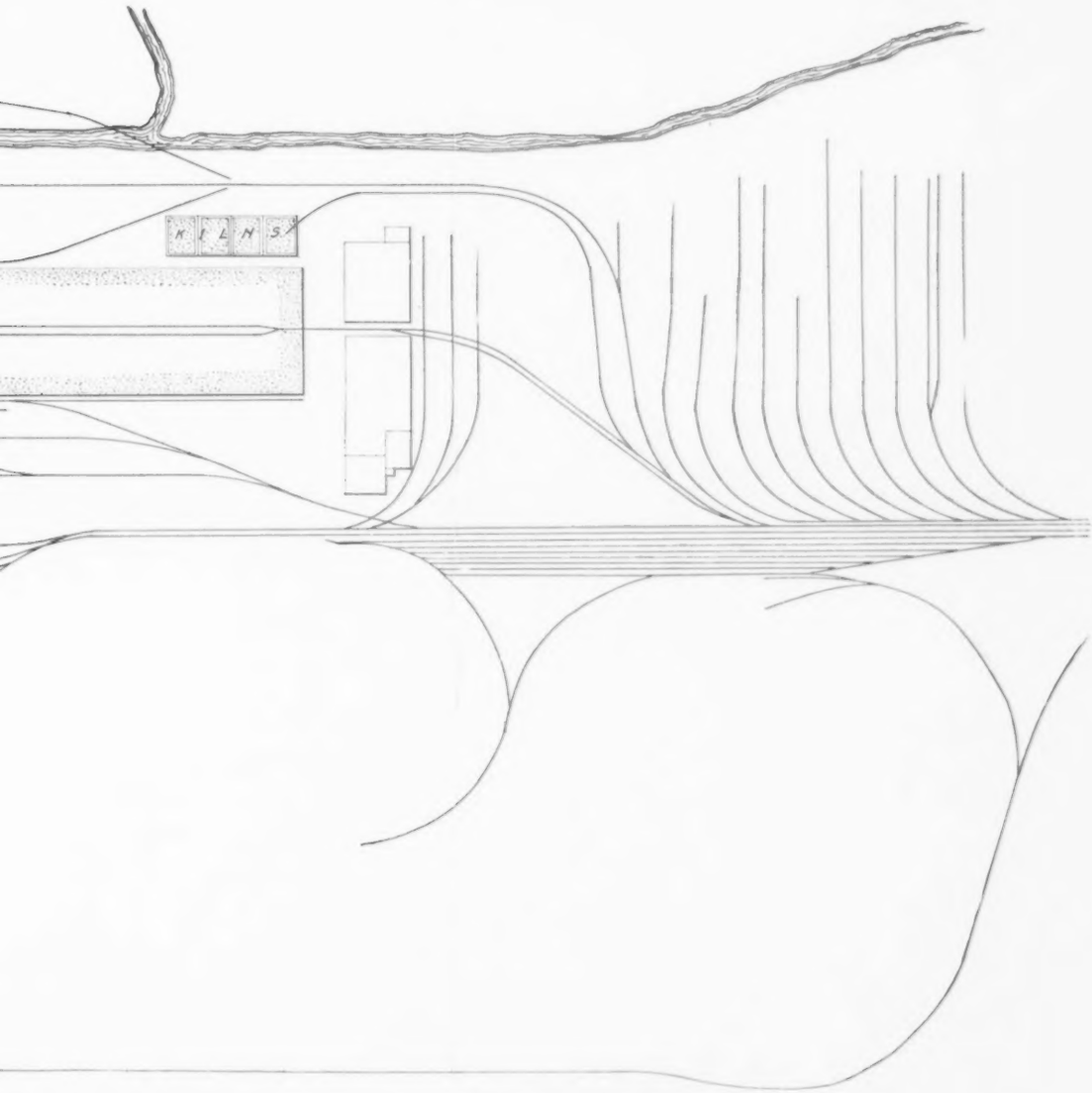
onspicuous the present installation of coke ovens. At the left may be seen the slip by
ge yard of the materials with one of the ore bridges. In the background may be seen



to the blast furnaces. Space is provided for two additional blast furnaces, the constr
be done with a mixture of molten blast furnace iron and cupola iron. The building ma
chasers which were being built by the Ford organization when the war came to a clos
ompleted hulls were transferred to the launching bridge and thence reached the fitting

ear Detroit, of the Ford Plan to Make the Blast Furnace

slip by which water shipments of raw materials may be
seen one of the blast furnaces.



construction of one of which is to be started this year.
ng marked auto body building was the main structure
a close. At the end of this building may be noted the
fitting-out berths in the slip.

ace a Part of the Automobile Plant

takes for taking off the gas are turned up through the platform and connect together at a point 25 ft. above the platform through cast steel fittings into two downcomer branches. High uptakes were provided in order to hold the stock in the furnace better. The uptakes are 4 ft. in diameter and the downcomer branches 4 ft. 6 in. in diameter. The bleeder valves are provided, one at the top of each pair of uptakes.

The two downcomer branches lead into the side of a dust-catcher and the gas leaves this catcher at the top. From the dust-catcher the gas is carried through a battery of 12 Kennedy centrifugal whirlers arranged in four parallel sets in series of three. From these whirlers the gas passes through a manifold 7 ft. 2 in. in diameter leading to the dry gas cleaner, and from the cleaner the gas is delivered into a clean gas manifold of the same diameter, and from this to the stoves and boilers. The gas is cleaned by passing through mats of steel wool, which are automatically cleaned, and the flue dust is discharged into hoppers beneath. A set of 5 ft. standard Kling quick operating goggle valves is provided for cutting off the dry gas cleaner so that the gas may be sent to the stoves or boilers without a second cleaning. The original plans called for the installation of a gas washer, but the dry cleaner was substituted. The checker openings in the stoves are smaller than in ordinary practice, and for this reason stoves require that the gas be unusually clean.

The Kling-Weidlein dry gas cleaner is a six unit cleaner. A second six unit cleaner of this type is being erected in connection with the second furnace. The installation of this cleaner was decided upon after an inspection at the works of the Carnegie Steel Co., Youngstown, where the first cleaner of this type was put in operation some time ago. The cleaner is of steel plate construction. Some of the advantages that led to its adoption in preference to a wet gas cleaner is that with its use the sensible heat of the gas is retained, its power requirements are very low, being approximately 4 hp. for the automatic operation for the entire equipment of the six unit, as compared to 80 to 100 hp. given as the power requirements for a wet washer, no water for cleaning as compared with 2,000,000 to 3,000,000 gal. per day required by a wet washer; settling basins are eliminated and pollution of water in the river is avoided. The cleaner was installed by Arthur G. McKee & Co., Cleveland.

The Skip Incline and the Specially Designed Carriage Beneath Which the Bucket Is Suspended. The whirlers appear in the background

Bleeders are provided on the ends of the stove and boiler gas mains and there are mushroom valves for cutting off each furnace from the boiler gas main. There is but one boiler gas main for both furnaces, and mushroom valves are provided for use in cutting off one furnace when only the other furnace is being operated.

There are four stoves for each furnace, 24 ft. in diameter and 100 ft. in height and with a heating surface of 100,000 cu. ft. each. The stoves are of the two-pass side combustion type and have a special design of 2 x 12 in. checker flues. A special type of brick is used in these flues. The brick are 3 x 6 x 16 in. in size with ½ in. recessed ends to provide the 2 x 12 in. flues. The stoves are designed with small flues to get a large amount of heating surface in order to provide the high blast heat that has become the more general blast furnace practice. The stoves have 2 in. asbestos installation on the sides and Sil-o-cel powder on the tops of the domes. All heating blast mains and bustle pipes are insulated with asbestos board between the brick and shell.

The chimney valves are of the mushroom type with water cooled seats. The hot blast valve is

Bucket Suspended from Top of Furnace Ready to Be Seated on the Furnace Top

a hollow steel valve of welded steel plate construction and works on a bronze seat. This valve and the seat and stem are water cooled.

The stoves are equipped with Kennedy gas burners. A specially designed Kennedy gate valve is used for cutting the cold blast from each stove on the cold blast line. The mixing pipe from the end of the cold blast main to the hot blast main is equipped with a McCarthy regulating and drop valve. The stoves are served by a brick lined steel plate stack with a bell type of base 190 ft. high and 18 ft. in diameter at the base and 8 ft. 3 in. in diameter at the top.

The cast house is equipped with a 20-ton Pawling & Harnischfeger crane for general handling and a Mullen tapping machine and a Berg-Brosius clay gun. A track is provided on each side of the cast house, the hot metal track being on the east side and the cinder track on the west side. The metal will run in cast iron runners from the tapping hole to the ladle. There are six 75-ton Pollock and one 95-ton Treadwell ladle cars for taking the hot metal either to the pig machine or to the foundry for direct casting.

One end of the foundry is only about 75 ft. from the cast house. A Uehling pig casting machine is provided. Above this machine is a special tilting trolley of 100 tons capacity built by the Morgan Engineering Co. for tilting the ladle. If the metal goes to the foundry, a Wellman-Seaver-Morgan gantry crane will be used for tilting the ladle in pouring the metal from the furnace ladle into the foundry receiving ladles. Cinder will be loaded into Pollock cinder cars and, for the present, dumped at a convenient point. Plans for the final disposal of slag have not yet been worked out.

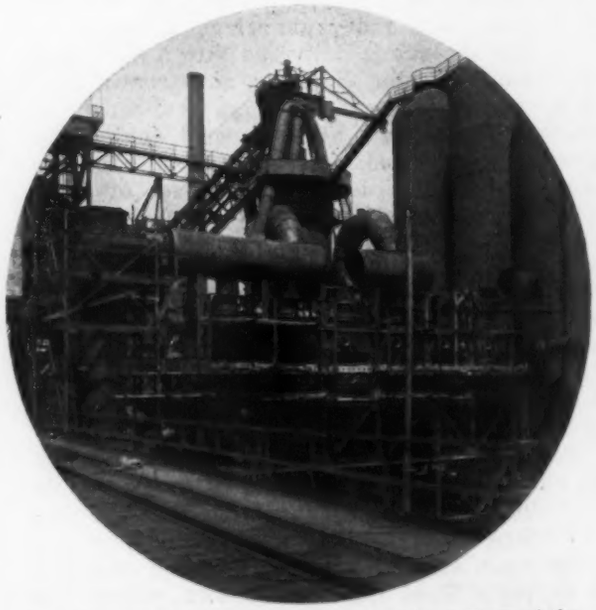
The cast house is of unusually elaborate construction. It has heavy brick walls with red faced brick on the outside and wainscoting of fire brick on the inside. There are heavy sliding steel doors in each bay, and above the crane runway and all around the building are factory ribbed glass windows in swinging steel Lupton sash, making the interior well lighted and permitting the cast house to be completely closed with the exception of the open roof monitor.

Extensive dock and handling facilities have been provided for handling ore, coal and limestone, for not only will ore be brought to the furnaces from the Lake Superior mines but coal and limestone will be shipped to the plant by boat from Lake Erie docks. A slip 250 ft. wide, 2614 ft. long and 25 ft. deep has been built, on each side of which are concrete docks extending the length of the slip. At the point at which the slip runs into the river, there is a turning basin providing sufficient space for turning the largest lake freighter.

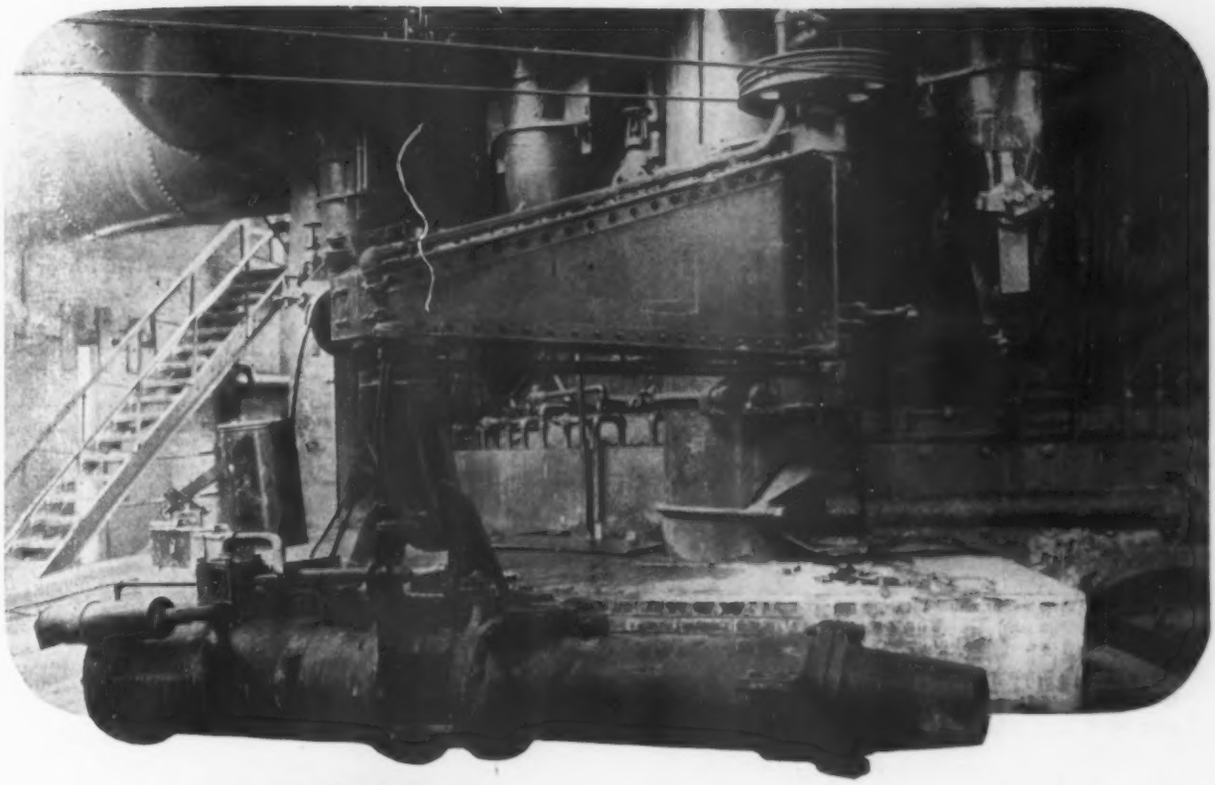
The ore and coal storage yard and the unloading dock are on the east side of the slip. The unloading equipment includes two standard Hulett ore unloaders built by the Wellman-Seaver-Morgan Co. and a Mead-Morrison coal unloader, equipped with 10-ton clam shell buckets. There is also a Mead-Morrison car dumper for dumping cars of coal shipped by rail. The three boat unloaders run on the same track along the dock. This track extends the full length of the dock and has a span of 70 ft. Ore, coal and limestone will be dumped from a cantilever back of each unloader into a trough 70 ft. wide and from this trough two bridges will distribute the raw material to the stock yard under the bridge or deliver it to transfer cars on the trestle. These are Mead-Morrison bridges with a 350 ft. span between the shear leg and pier leg and with a 115 ft. cantilever over the dock and an 88 ft. extension with a shear leg, making the total length of the bridge 523 ft. The bridge is served by a 10-ton man trolley which handles a 10-ton bucket.

The River Rouge has not yet been made navigable for large lake boats and, until the necessary dredging is done to permit the bringing of cargoes to the dock ore will be unloaded at the dock of the Detroit Iron & Steel Co. and both ore and coal brought to the plant by rail and discharged from an overhung track that is carried on brackets on the pier leg wall. One half of the storage yard is used for ore and the remainder for coal and limestone. In building the ore storage yard, piles were driven 4 ft. apart and above these was placed a reinforced concrete mat 2 ft. in thickness.

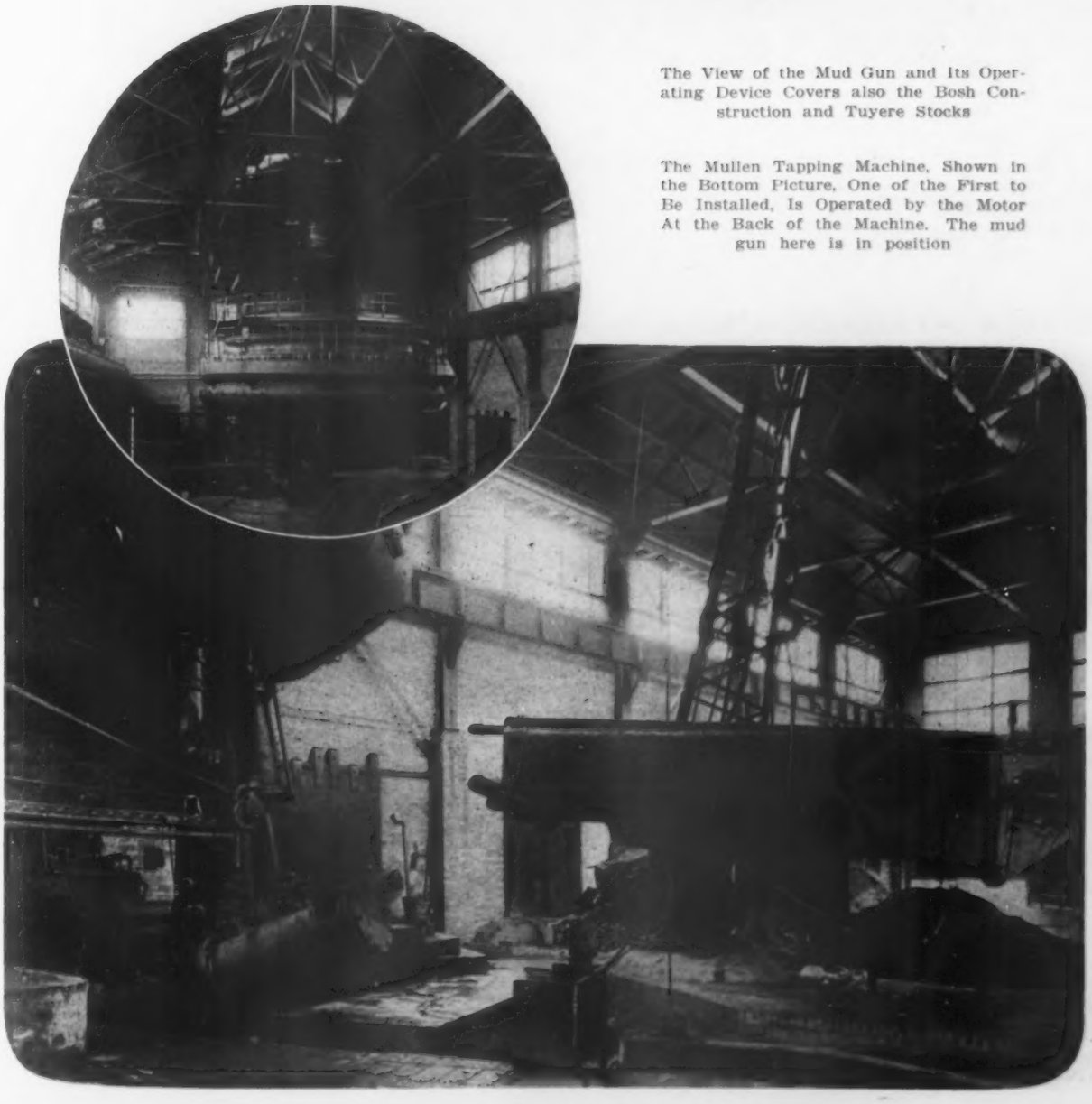
Ore, coal and limestone are delivered by the bridge into wide gage Hoover-Mason transfer cars are on the high line trestle over the bins which are in parallel line with the storage yard. There are three tracks on the high line. One is a three rail track, two rails providing the wide gage for the transfer cars working with the ore bridge



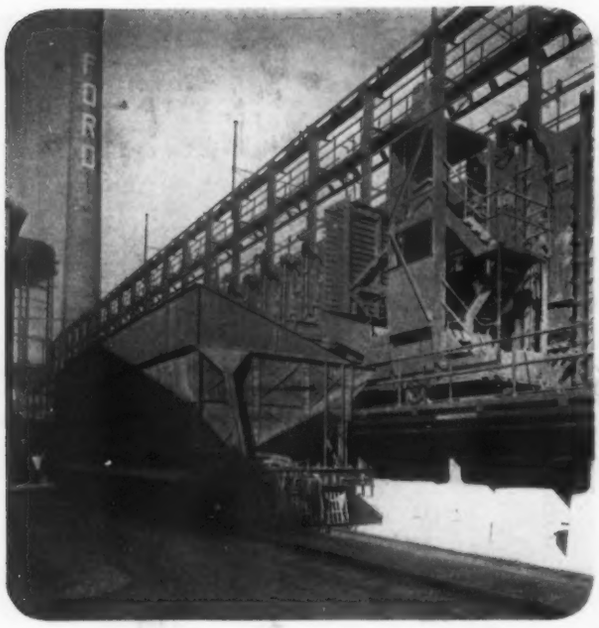
The Kling-Weidlein Gas Cleaner Is Located Back of the whirlers. The gas manifolds not yet completed



The View of the Mud Gun and its Operating Device Covers also the Bosh Construction and Tuyere Stocks



The Mullen Tapping Machine, Shown in the Bottom Picture, One of the First to Be Installed, Is Operated by the Motor At the Back of the Machine. The mud gun here is in position



The Quenching Car and the Guide for Directing the Coke to the Car

and an inner rail making the same track a standard gage track for handling rail shipments of ore. Coke is brought from the screening stations at the coke ovens to the furnace coke bins in specially designed Hoover-Mason scale transfer cars.

The stock bins for ore, coke and limestone are of reinforced construction of standard Hoover-Mason design. There are 32 bins divided longitudinally into two rows. The west row of bins are for ore and those on the east of furnace side are for coke and limestone. Each bin has a capacity of 200 tons of ore or 60 tons of coke. The bins have electrically driven revolving drum gates.

Ore, coke and limestone are delivered from the bins into double compartment Hoover-Mason scale larries for hauling to the skip bucket, each compartment having a capacity of 15,000 to 20,000 lb. of ore. The larry cars are of bottom dump hopper type, dumping into a chute that feeds into a skip bucket which has a capacity of 6000 lb. of coke. The revolving drums that feed from the stock bins to the larry cars are solid plate on the ore side and perforated on the coke side, giving the coke an extra screening before going to the furnaces. There is a hopper under the skip bucket to take care of a spillage when the larry cars are being dumped and this feeds from the hopper into a Link-Belt conveyor which carries the material up to an overhead hopper which delivers it back to the scale larry cars.

The skip incline is a self-supported structure 190 ft. long, inclined at 50 deg. from the horizontal and has a single track. The single skip bucket is suspended underneath a specially designed carriage. The bucket and carriage are counterweighted and are operated by an Otis specially designed gearless hoisting engine, the armature of the motor being directly connected to the drive of the hosting engine. The skip bucket is suspended under the carriage on a rod and bell and at the top of the furnace the bucket is seated on a small hopper over the large bell. The further travel of the carriage lowers the small bell at the bottom of the bucket, allowing the stock to be discharged into the large bell. When the bucket is not on the top of the furnace, a hydraulically operated sliding cover plate seals the top of the furnace, this being the latest Kennedy design. After the stock is discharged into the large bell, the bell is actuated by hydraulically operated cylinders.

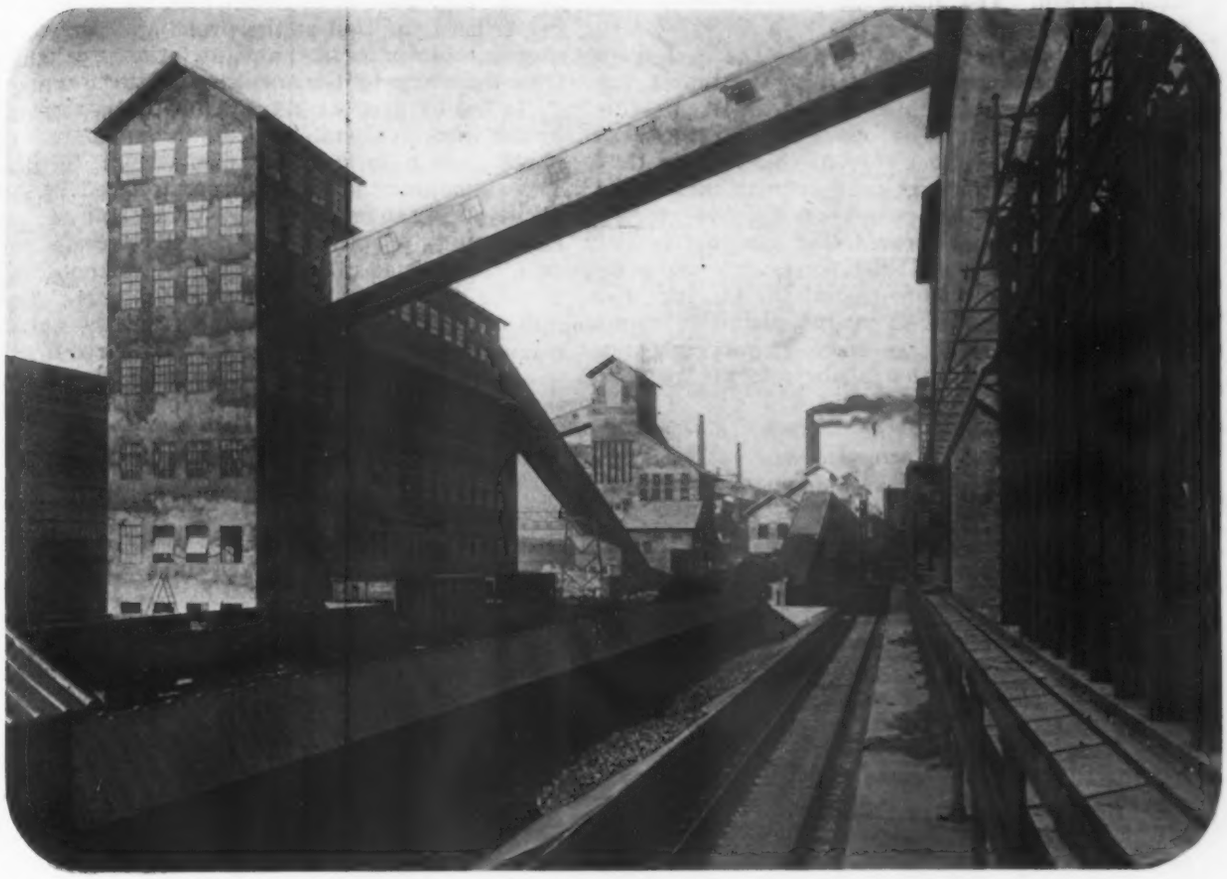
At the top of the rod that supports the bucket there is a gear and when the bucket runs to the bottom of the skip, this gear on the bucket supporting the rod, meshes with a rack operated by hydraulic cylinders, revolving the bucket to insure uniform distribution of the stock in the furnace.

The hoisting engine is supported on a tower half way up the skip. This tower also carries the counterweights for the skip car and carriage. The skip hoist operated on a load of 15,000 lb. of ore at 600 ft. per min. The control for the skip hoist is in the operator's house situated on the ground level at the skip pit. The same operator also controls the bucket turning mechanism sliding cover to the top and the large bell operating cylinders.

One of the special features of the plant is that in addition to having indicating pyrometers, pressure gages, etc., at convenient locations, numerous instruments are provided for recording the stove temperatures, hot blast temperatures, furnace top temperatures, furnace top pressures, gas pressure before entering and after leaving the cleaners, stock line levels, etc., a complete record being kept of all temperatures and pressures. In addition, a complete time record is kept of all motions in connection with the furnace charge so that at the end of the day the superintendent has a full record of the various furnace operations. Every time the skip bucket goes up, the bucket is turned at the bottom, the sliding cover is opened and the bell is lowered, a record of these various movements is made by the different instruments in the instrument room. A record is also kept of the temperature of the cooling water before and after going to the furnace, these being recorded both on the intake and outtake. It is stated that nothing nearly as complete in the way of recording instruments has ever been attempted in the operation of a blast furnace. The various recording instruments are located in a separate instrument house, being mounted on a slate board.

Cold blast for the stoves is supplied by three General Electric turbo-blowers located in the cen-

The Coke Quenching Tower Carries the Steam Well Up in the Air



The Coke Wharf Is Located Along the Discharge Side of the Ovens

tral power house which is now under construction and which will supply power for the foundry, machine shop and also other power requirements. Vertical Wheeler condensers are used for the turbo-blowers. The latter are mounted on structural steel foundations. Steam is supplied to the turbo-blowers by boilers in a temporary power house. Four water tube boilers of 2647 hp. normal rating will be installed in the new power house by the Ladd Boiler Co. These are said to be the largest single boilers ever built. The boilers will be fired with both blast furnace gas and powdered coal, each having a burner for each fuel. A plant for pulverizing coal is being erected adjoining the power house by the Pulverizer Fuel Corporation. A belt conveyor will convey coal from the coke breaker building of the coke plant to the pulverizer plant, a distance of 600 ft. The pulverizing fuel will be elevated above the roof of the turbo-blower section of the power house and carried in 16 in. screw conveyors to the main boiler room.

Cold blast lines from the turbo-blowers to the stoves are riveted pipe 42 in. in diameter. At each blower several valves provide an interchangeable valve system for connecting different blowers to one or the other furnace and at each blower there is also a Mesta multi-port check valve to protect the blowing engine from the liability of excessive back pressure due to gas explosions.

The water supply for the furnaces is taken from the upper end of the slip passing through stationary and revolving screens. It is carried through a tunnel 12 ft. in diameter to the main power house where the tunnel divides into two branches, one entering the turbo-generator room and the other the turbo-blower and pump room. Corresponding discharge tunnels leave these rooms and join at the north end of the coke plant, the tunnel discharging into the river below the coke plant. Water for each blast furnace is supplied by an Allis-Chalmers centrifugal pump with a capacity of 3600 gal. per min. One spare pump is provided. Each 12 in. supply line for the furnaces is provided with a twin basket Elliott strainer. Water connection is made to a water tank for use in an emergency should the water pumps get out of commission. The daily water requirements of the two furnaces for cooling purposes is 10,000,000 gal. The pumping head is 200 ft. and the distance the water is pumped is 550 ft. to furnace A and 880 ft. to furnace B. Compressed air is supplied by a temporary air compressor plant in the ore yard.

The coke oven plant consists of two batteries of Semet-Solvay 15-ton coke ovens of the regenerative type, 120 ovens in all. These will carbonize 2500 tons of coal per day and their daily output is 1800 tons of coke. It is expected that when the blast furnaces and foundry are in full operation these will consume all the coke suitable for use. The surplus coke in small size will be disposed of as domestic coke. The plans provide for two additional batteries of coke ovens and the erection of these ovens may be started late in the year.

The coal is conveyed by a belt conveyor, either from the coal storage yard if shipped by boat or from the car dumper if brought by rail. The conveyor takes it to the Bradford breakers where it is given a preliminary crushing. From the breakers, conveyors carry it to four mixing bins, each of 250 tons capacity. Each bin is equipped with a steel flight apron conveyor over which the flow of coal can be regulated. This permits the mixing of different kinds of coal in any desired proportion. The apron conveyor delivers the coal to pulverizers in which the fuel is pulverized until 85 to 90 per cent of it will pass through an ⅛ in.

mesh screen. The plant is provided with No. 8 Williams pulverizers.

A belt bucket elevator receives the coal from the pulverizers and conveys it to the top of the charging bins. It is charged into the ovens with Semet-Solvay electrically operated charging cars which differ from most cars of this type in that they have four entirely separate compartments. The guide that directs the coke from the oven to the quenching car is so located that the fuel is discharged at a sufficient distance above the platform on the coke side to permit the placing of a rail about 30 in. high along the platform, eliminating the danger of workmen stepping off the edge of the platform and falling into the quenching car.

When the quenching car is loaded, it is moved to a quenching tower located at the extreme end of the ovens where the coke is quenched by water from two rows of sprinkler pipes above the car. This tower is about 75 ft. in height, built of brick and has an open top from which the steam escapes. The quenching tower was provided for two purposes; one is that with the steam carried well up into the air through the tower, a cloud of steam near the ground is avoided and the danger of accidents to workmen walking along the tracks in the vicinity of the ovens by reason of having their view obscured by a cloud of smoke, is eliminated. The other reason for the tower is that it keeps the steam away from the iron work of the ovens and consequently protects this work from corrosion. The quenching car was built by the Atlas Car & Mfg. Co. and the coke pusher by the Wellman-Seaver-Morgan Co.

After the coke is quenched and drained, the quenching car is brought back on the same track at the rear of the ovens and coke is delivered to the coke wharf 200 ft. long that extends along the ovens on the opposite side of the track. From the wharf the coke is fed to a belt conveying system that carries it over screens and picking belts for a general sizing and preparation. A belt-boom conveyor loads foundry coke directly on railroad cars as it is produced, thus avoiding dropping the coke and breakage. Other coke is discharged into bins from which it is delivered to cars by gravity chutes. Coke for the blast furnaces is delivered to the electrically operated transfer cars that convey it to the high line trestle and discharge it into the coke bins.

The gas driven off in coking is collected into two separate mains, one main for rich gas and the other for lean gas. The rich gas is sold to the Detroit City Gas Co. to which it is delivered by a booster cross compound compressor supplied by the Hooven-Owens-Rentschler Co. The lean gas is used for fuel at the ovens and for various uses in other parts of the plant. Gas is exhausted from the ovens by General Electric turbo units.

In the by product plant, ammonia is recovered by the direct sulphate process as ammonium sulphate, which is used as commercial fertilizer. The ammonium sulphate is precipitated in saturators of Semet-Solvay design by passing the oven gas through a bath of 600 deg. Baume sulphuric acid. It is dried in centrifugal driers and shipped in bags or bulk as commercial sulphate.

Crude light oil is recovered from the gas and the surplus remaining from the gas enrichment is washed and fractionated into refined light oil through a light oil and benzol apparatus of Semet-Solvay design. This refined light oil is mixed with gasoline, making motor benzol.

The yield per ton of coal that is being obtained in the coke ovens and by product plant is 5600 cu. ft. of gas at 640 b.t.u. and 18 candle power per cu. ft., 2 gal. of motor benzol, 25 gal. of ammonium sulphate and approximately 8 gal. of tar.

At present the Ford Motor Co. is using the entire production of motor benzol but in the future expects to have a surplus which will be placed on the market. Some of the tar produced is now being sold but the company expects later to use its entire tar output for various purposes within the plant.

The blast furnaces were designed by Julian Kennedy of Pittsburgh, who also did the engineering work in connection with the blowing equipment in the new power house and, in addition prepared the plans and specifications for the docks, storage yard, etc., covering the handling of the ore from the time it reaches the docks until it is delivered to the furnaces. The steel work for the furnaces and stoves and skip were fabricated and erected by the Riter-Conley Co. The coal and coke handling plant and ovens were designed by the Semet-Solvay Co. and were erected by the Heyl-Patterson Co. The ovens were placed in operation last September by the Semet-Solvay Co. but the operation of the ovens and the by product plant has been taken over by the Ford Motor Co. In assuming the operation of this, the company took over the plant organization built up by the Semet-Solvay Co.

The laying out and construction of the River Rouge plant has been under the general supervision of W. B. Mayo, chief engineer of the Ford company and the engineering work in connection with the power and boiler house and pumping equipment as well as erection of the foundry is in the hands of the engineering department of the Ford company.

The Unloader for Ore and Coal with Two Ore Bridges Appear in Background

Transportation Situation Is Very Serious

Railroad Strike Continues and Causes Idleness of Many Plants—Production of Steel in Youngstown District Greatly Reduced—News from Other Centers

YOUNGSTOWN, OHIO, May 4.—Unless the railroad strike clears up within a short time iron and steel manufacturers will be obliged to wholly suspend operations and close their plants. Wearied by unceasing labor harassments, some employers are beginning to feel that now is as good a time as any for a "vacation" and are convinced that only a prolonged layoff will bring the disaffected element in labor to its senses. Industrial workers, as a rule, are not in sympathy with the railroad strike and its consequent dislocation of business and employment, though sympathizing with the wage demands of the insurgents. The present disturbance, then, is not to their liking, following so soon after the steel strike last fall and irregular operating conditions subsequently.

Action of roadmen, particularly firemen, of the Pennsylvania and Erie, in joining the ranks of the strikers will, if prolonged, reduce the steel industry in the Valley to a state of impotency as far as operations are concerned. Hitherto, movement of solid trainloads of coal and coke into the district has enabled the maintenance of departments which otherwise would have been forced into idleness.

May Be as Costly as Steel Strike

Though efforts are being put forth by the railroads to recoup their forces, the railroad strike threatens to prove as costly to the steel industry in the Mahoning Valley as the strike of steel workers, unless there is an early change for the better. The principal trunk lines have endeavored to fill the places of the strikers through advertisements and bulletins and some minor relief has been afforded in this manner. Congressman John G. Cooper, representative from this district, has exhausted his influence to have the railroaders return to work pending a decision affecting their wages by the Rail Wage Board at Washington. Mr. Cooper informed the strikers, who had appealed to him to expedite such a decision, that the board would not consider their case until the men resumed their posts.

Schedules Disrupted

The principal producers started the week with depleted schedules which promise to further diminish within the next few days. The Republic Iron & Steel Co. is pouring from three blast furnaces at Haselton, 12 open hearths are active and a small number of finishing mills. The Youngstown Sheet & Tube Co. is operating two blast furnaces, six open hearth furnaces and a number of sheet mills. Some other departments are producing on a small scale. The Brier Hill Steel Co. had one blast furnace, six open hearths, blooming mill, one plate mill and most of its 28 sheet mills active at the beginning of the week, though production was at a low ebb. The Carnegie Steel Co. began the week with five of six blast furnaces and 13 of 15 open hearths active, the Bessemer department and 40 and 42-in. mills. Part of last week, four bar mills at the Upper Union mills and two at the Lower mills were in commission. The McDonald bar mill plant continues active on power supplied at the Ohio Works generating station.

The Falcon Steel Co. planned, if fuel permitted, to start its cold rolling department at its Niles plant this week. To date it has been operating only its hot mills since its plant began production in March. The Trumbull Steel Co. has been enabled to maintain schedules in a number of sheet mills and in its cold strip department by reason of the fact that power is purchased from a public service producer. Its steel making department has been idle for over a week. At Girard, the A. M. Byers Co. is maintaining activity in its puddling department, its blast furnace being banked.

Mill and Furnace Conditions

The McKeefrey Iron Co. has been enabled to blow in its stack at Leetonia, Columbiana County, which was banked for a short time. Stack No. 1 of the three furnaces operated by the Shenango Furnace Co. at Sharpsville, Pa., is blowing, the other two being banked. The furnace department of the Valley Mould & Iron Corporation has also partially resumed.

In the Shenango Valley the American Sheet & Tin Plate Co. started 30 hot mills Sunday midnight, and the Mercer works at Farrell. The Carnegie Steel Co. is operating two 500-ton stacks at its Farrell plant, banking a 350-ton furnace. The American Steel & Wire Co. will operate its Farrell plant close to normal. The Carnegie North works closed. The Sharon, Lowellville and Haselton plants of the Sharon Steel Hoop Co. are idle.

The outstanding fact revealed by the operating schedule is that production is at a very low ebb and will perforce continue so until transportation becomes normal. Most of the tonnage that is produced is piled. One Mahoning Valley sheet maker, however, shipped a solid trainload of sheets last week to auto makers in the Detroit district. Ten high-powered motor trucks carried steel sash from the Truscon Steel Co. plant in Youngstown to a Detroit contractor, who needed the material for immediate construction work. The motor is being utilized as extensively as possible.

Inquiries Decline

With production of finished material practically stopped in most plants, inquiries have fallen off in the past few weeks, buyers evidently appreciating the fact that it is impossible to secure shipments. From present conditions, it is unlikely there will be any third quarter sheet tonnage available, except that which is procurable through brokers and jobbers. Naturally the mills are in no condition at present to entertain any new business. The apparent willingness of buyers to pay premium prices hitherto unheard of for specified delivery is no longer evident. For one-pass black 9.50c. is the best price reported within the past 10 days.

The scale for sheet and tin mill workers for the May-June period will show an advance over the March-April rate, by reason of the higher price obtained by mills for product delivered during the last two months, on which the rate is based.

Practically no scrap is moving because of the strike and prices have softened proportionately. Heavy melting is quoted at $25 to $25.50, cast iron borings at $18.25 to $18.50 and machine shop turnings at $14 to $14.50.

Critical Situation in Milwaukee

MILWAUKEE, May 3.—A critical situation respecting the bituminous fuel supply of local industries arose as April came to a close, and unless relief comes in the nature of lake and rail shipments from the Eastern and Central States coal fields within the next few days, operation of industries will be seriously restricted. The machine tool shops here are fairly well supplied for immediate needs, but require replenishment soon. For the present, production is largely a matter of adequate fuel supplies, for the labor situation is not upset, although the shortage of men, skilled and unskilled, remains acute.

Transportation difficuties are being ironed out grad-

ually. All local roads have removed embargoes on acceptance of carlot freight. Deliveries of machine tools still are badly hampered, especially to Eastern buyers. There has been no sign of a decline in demand; in fact, the extreme difficulties of getting deliveries appears to have injected unusual activity into requirements.

Ingot Molds and Rejected Steel Ingots

Advantages and Savings from the use of Hot-Top Large-End-Up Molds—Use of the Gathmann Mold

AN article on "Ingot Molds and Rejected Ingots," which appeared in THE IRON AGE some weeks ago, discussed the tonnage of ingots made in the United States and the percentage of rejected ingots in ordinary steel practice. It expressed the views of a large maker of ingot molds. Exceptions have been taken to certain statements of this manufacturer in a communication to the editor of THE IRON AGE from Emil Gathmann, Gathmann Engineering Co., Baltimore, Md., inventor of the Gathmann ingot mold and process—particularly to the statement that "in most cases the reduction in the amount of piping and segregation achieved by the patents issued has resulted in an increased cost which more than offsets the saving effected."

The substance of Mr. Gathmann's communication follows:

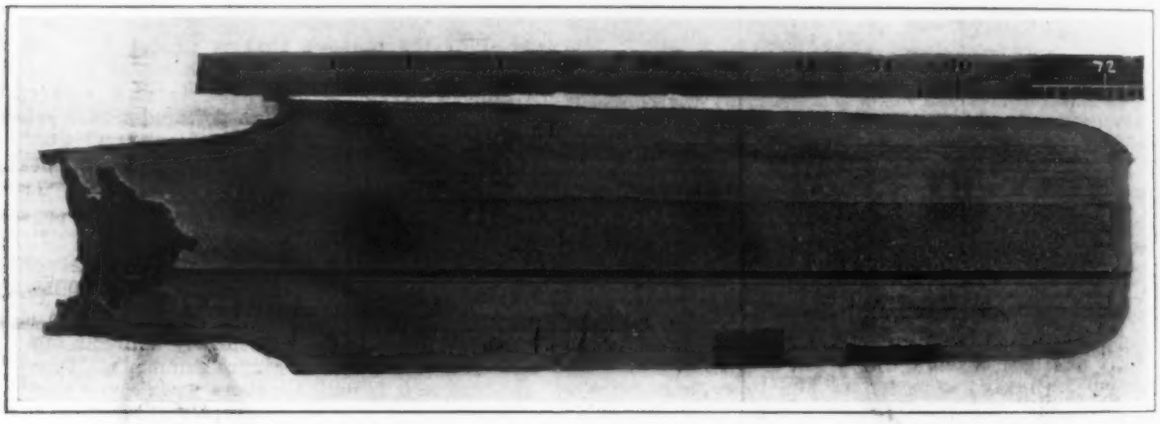
Of the approximately 43,000,000 tons of steel ingots made during 1918, over 5,000,000 tons was made of the class termed killed or piping steel—that is, steel which was practically degasified. Of this, approximately 1,000,000 tons was produced in the piping and segregation-reducing ingot molds and by methods as covered by patents developed, owned and controlled by the writer's company. The croppage necessary to obtain sound product in killed or degasified steel is, as previously stated, from 30 to 35 per cent of the ingot weight when the ingots are cast in the usual well-known type of molds made of iron having the large section of the ingot at the lower portion. The ingot cast in my large-end-up pipe-reducing ingot mold requires an average cropping of 12 to 15 per cent to eliminate the pipe section and to obtain sound, homogeneous steel. Like results are obtained by Sir Robert Hadfield's patented method of ingot production which, I believe, has been used to a very considerable extent in Great Britain and on the Continent, although not as yet commercially used, to my knowledge, to any extent in American practice.

A saving of 15 to 20 per cent of the weight of the ingot is thus effected by specific methods of teeming and pipe-reducing ingot molds. This saving has resulted during 1919 to at least several million dollars to the steel producer using the writer's method and molds, in addition to which a superior quality of steel was undoubtedly given the buyer.

Any steel plant that would scrap 17 to 19 per cent of its ingots due to errors in estimating size of ingots as compared to the size of blooms and billets rolled therefrom in its mill practice would soon undoubtedly go out of business. The figures of 18 to 20 per cent, given as a total scrap average or losses of American steel mills, are approximately accurate, but this does not indicate that the remaining 80 to 82 per cent of the steel which was sold in the market was sound and free from blow-holes and piping defects.

I cannot understand where your informant, who was a large mold manufacturer, obtained his data that the increased cost in obtaining large yields of sound steel more than offsets the saving effected. This statement must have been made in ignorance of the present state of the art but is, nevertheless, quite harmful to the best interests of the steel producer as well as of the steel user, and tends to injure and retard advancement in the art of sound steel production.

The writer's method of increased sound steel production is covered by numerous patents owned or controlled by the Gathmann Engineering Co., Baltimore,



Steel Ingot Cast in Gathmann Ingot Mold and Split. The piped section is 5 per cent and the yield of sound billets is claimed to average from this practice 86 per cent. The carbon was 0.57 per cent

and has been successfully used during the past four years by the United States Steel Corporation and by some other large and numerous small makers of high-grade steel ingots of the character normally defective to so large a percentage due to piping and segregation. The United States Steel Corporation, as a matter of fact, recognized the validity of the writer's patents and said recognition was authenticated by decree of the court of proper jurisdiction in May, 1919.

For your further information and that of your many readers to whom this matter may prove of interest, a photograph of an ingot produced in the Gathmann patented type of mold is sent herewith. Many thousand tons are made in the Gathmann type daily, and the photograph of the Gathmann ingot is a fair example of results obtainable. The total added cost of using the Gathmann pipe-reducing (Not pipe-elimination, which desideratum has not as yet been obtained) type of mold averages 70c. to $1 per ton of ingots produced. The saving effected obviously depends upon the differential in salable billet and in the value of the scrap. Taking this differential at an average price of $20 per ton, the net saving effected by use of the Gathmann mold and method is $2 to $4 per ton of ingot produced. As approximately 3000 tons of ingots is now produced daily in the United States in Gathmann patented molds, the average daily saving effected to the American steel industry by means of the patented inventions and improvements is approximately $10,000—possibly a great

deal more, as large quantities of alloy and high-grade tool steels are being made in Gathmann molds, which steels have a differential of $100 and more per ton of ingots in the value of billet and scrap material.

The writer must take particular exception to the article primarily because of the last paragraph in which appears a statement which I believe is harmful to any future advancement in the art of sound ingot production, and which advancement I feel assured THE IRON AGE is most anxious to promote.

REVERSES DECISION

Commerce Commission Makes New Ruling as to Export Freight Rates

WASHINGTON, May 4—After a rehearing of the case involving export freight rates on iron and steel articles from Chicago and vicinity to the Pacific coast, the Interstate Commerce Commission has held the existing rates to be prejudicial to the Middle West territory. The case was brought by the Illinois Manufacturers' Association, the Inland Steel Co. and the Northwestern Barb Wire Co. They contended that the rate of 60c. per 100 lb. on iron and steel articles in carloads from Chicago to Pacific coast ports for export to the Orient was prejudicial to the Chicago territory, inasmuch as the same rates applied from Pittsburgh. It was contended that the rate from Chicago should be made lower than from Pittsburgh, in view of the fact that in the case of rates to Eastern ports the rate in each instance from Pittsburgh is lower than from Chicago.

The commission in its decision reverses its previous findings, having held that the rates from Chicago were not shown to be unreasonable or unduly prejudicial.

In the findings of the commission it is pointed out that on traffic destined to Europe, Africa and South America, moving through Atlantic ports, Pittsburgh has the advantage of a rate to the Atlantic ports 18 cents lower than the rate from Chicago, while on traffic moving through Pacific coast ports the two points are placed on the same basis.

Commissioner Meyer, in setting forth the reasons for the commission's latest decision, says:

"The rates under attack were established pursuant to a policy of equalizing through charges via Atlantic and Pacific coast ports. In general, this policy may be described as follows: From among the various interior competing centers of production one was selected upon which to make the equalization. Pittsburgh was selected in this case as being the point nearest to the Atlantic seaboard from which it was felt an equalization could be made without making unduly low rates. To the rail rate from Pittsburgh to New York there was added the ocean rate from New York to the foreign port of destination in the Orient—Kobe in this case. From the sum thus arrived at there was subtracted the ocean rate from Pacific coast ports to the same foreign port of destination. The difference was the rate which was supposed to equalize the routes via Atlantic and Pacific ports and other producing points were placed on the same basis.

"Even if it should be true, as was argued, that Chicago would get no benefit from the establishment of a rate made a differential lower than the rate from Pittsburgh on export business through the Pacific coast, because of the lower through charge still available to Pittsburgh manufacturers through the Atlantic ports, if the present adjustment does not meet the tests of reasonableness it should be set aside and replaced by a set of rates which does meet the requirements of reasonableness and propriety in relationship. It is our duty to prescribe rates that meet the tests of the law.

"This case is not free from difficulties and doubt. A careful reconsideration of the entire record in the light of the reargument requires us to modify our previous findings. The record indicates that the congestion at New York when the export rates were established has been to some extent removed, and we believe that the rates should now be placed upon a more normal basis, according to manufacturers at Chicago the benefit of their location, 468 miles nearer to the Pacific coast than their Pittsburgh competitors.

"The distance from Minnequa, Col., to San Francisco is 819 miles less than the distance from Chicago and the export rate is 10c. less. For the additional distance from Pittsburgh as compared with Chicago, the rate from Chicago should not be less than 6.5c. per 100 lb. lower than the contemporaneous rate from Pittsburgh. Interveners located at Terre Haute and Vincennes, Ind., from which points the rates to the Atlantic seaboard and Pacific coast ports are the same as from Chicago, should be given the same basis.

"We are of the opinion and find that the present rates on iron and steel articles in carload, from Chicago, Terre Haute, Vincennes and Pittsburgh to Pacific coast ports, for export, are unduly prejudicial to Chicago, Terre Haute and Vincennes and preferential of Pittsburgh to the extent that the rate from Chicago, Terre Haute and Vincennes to Pacific coast ports exceeds a rate 6.5c. per 100 lb. lower than the rate contemporaneously maintained from Pittsburgh to the same ports."

In view of the fact that the complaints made the Director General of Railroads the only defendant, the commission has not entered any order prescribing new rates, pending applications to be filed, naming various railroads as defendants.

Newark Foundrymen to Discuss Costs

The subject of costs will be considered at the joint meeting of the Newark Foundrymen's Association and the Gray Iron Club, New York, at the Down Town Club, Newark, N. J., on May 12. The reception will start at 6 o'clock, the dinner at 6:30 o'clock, after which the discussions will take place. In order to furnish concrete talking points, the secretary has mailed to each member a blue print on a fictitious lot of gray iron castings on which the members are requested to quote their best price per pound, based on the weight and quantity named. Estimates are to be based on suitable patterns and core boxes being furnished. Quotations will be dropped in a box at the meeting and will be opened as if at a public letting. Each foundryman will go prepared to justify his quotation, explaining how it is made up. In this way it is believed more definite information will be available about the much-talked of discrepancies of prices quoted by different foundrymen.

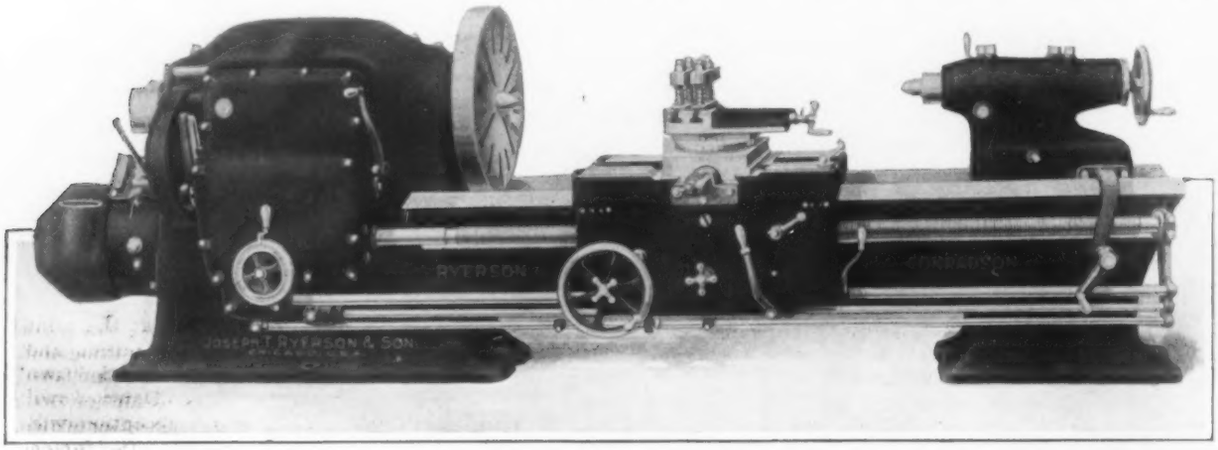
A list of questions relative to pig iron has also been mailed to each member to secure information so that the proposed increase of freight rate to Newark can be taken up with the newly formed traffic section of the Board of Trade. The following are the seven questions: What is your approximate yearly consumption of pig iron in tons of 2240 lb.? What percentage of this iron comes from Buffalo furnaces? What is the present freight rate, not including war tax, per ton of 2240 lb. of pig iron to your delivery point? What is your present delivery point, i. e., freight station? Have you your own siding? Would it be convenient to you to have pig iron delivered at some central dock in Newark and loaded on trucks by magnet? What do you consider a fair price per ton of 2240 lb. for loading pig iron in this way?

Technical Paper 241, of the United States Bureau of Mines, is entitled "Blowholes, Porosity and Unsoundness in Aluminum Alloy Castings." The author is Robert J. Anderson of the Bureau's branch at Pittsburgh. The paper discusses the magnitude of the light alloy industry; gases in aluminum; solidification of metals; analogy with steel; effects of various processes in casting, melting, molding, etc., as well as the metallography and radiography of the subject.

Ryerson-Conradson Selective Head Engine Lathes

The Conradson Machine Tool Co., Green Bay, Wis., has inaugurated the manufacture of high-power precision selective head engine lathes in five sizes, 15 ft., 18 ft., 22 ft., 27 ft., and 33-ft. swing, with any length of bed. The lathes are being distributed through the sales organization of Joseph T. Ryerson & Son, Chicago. A prominent feature of the machine is the method of driving. With hardly a change the lathes can be adapted to constant speed, single pulley drive, with or without spindle reversing attachment, or direct reversing motor drive. In this latter arrangement, the motor is bolted to the bed and the armature shaft directly connected to the main driving shaft, doing away with belts, tension idlers, and chain drives. If, for any reason, a reversing motor is not desired, a constant speed motor drive with spindle reversing attachment can be furnished. The changing from belt to motor drive or vice versa can be made at any time at small cost.

The controls have been centralized on the apron. From here the operator may start, stop and reverse the spindle, engage, reverse, or trip the feed, as well as traverse the carriage and cross slide.



Ryerson-Conradson Engine Lathe Arranged for Pulley Drive. These machines have 12 speeds and 28 feeds. All operations are controlled from the apron and all gears are permanently in mesh

The 12 spindle speeds are changed by two levers on the headstock, the one controlling the various sets of change gears and the other engaging the back gears. All changes may be made while the lathe is in operation. A hand wheel on the headstock can be turned to automatically select the feed.

The headstock is cast integral with the bed. This construction is more rigid than two-piece construction, and permits the use of larger drive gearing. The bed also serves as a container for oil, into which part of the gears are placed, thus to provide oil splash at all times.

The spindle is made large in diameter to reduce vibration, increase the bearing surface and provide for a large hole through the spindle. It is equipped with adjustable thrust bearings.

The belt driven machines have the pulley mounted on ball bearings which are carried on a stud, relieving the shaft of bending strains. The reversing mechanism, which is of the planetary type, has one of its pinions extended sufficiently to receive the power directly from the pulley. The reversing attachment is omitted in the motor driven lathes and, instead, a reversible motor is mounted on the bed, applying the power directly to the primary shaft. A cone of six gears is connected to this shaft, the extension of which carries the back gears.

The change gears on the secondary shaft are of the internal friction band type and are operated by tapered keys and wedges controlled by a lever mounted in a shift plate which indicates the various spindle speeds. This secondary shaft also carries the driving pinion and the back gear engaging device, which is operated by friction bands and a lever conveniently located on the headstock. The back gears, as well as change gears, are permanently in mesh and the various changes can be made quickly without engaging more than one set of gears at a time. The power is transmitted to the spindle through a phosphor bronze driving pinion and herringbone gear, thus to reduce back lash to a minimum.

Twenty-eight feeds are obtained by two sets of geared cones controlled by dive keys, which in turn are actuated by a hand wheel and lever on the headstock. Provision is also made for transposing and compounding gears, permitting the cutting of threads of almost any desired pitch.

The longitudinal and cross feeds are effected by independent sets of worm gears which are engaged by friction cones. A device prevents the engagement of friction and positive feeds simultaneously, and a lug with micrometer adjustment automatically trips either the friction or the positive feed at any point along the carriage travel.

The cross slide traverse is regulated by hand and power. The tool post is mounted on a swivel base equipped with angular hand feed. Means are provided to adjust all sliding surfaces for wear and all parts are protected from dirt and chips.

The bed is of box construction, with the guiding surface of the V's inclined 15 deg. to the perpendicular and the supporting surface 15 deg. to the horizontal. Because of the unusual vertical depth of the V's and their broad supporting surfaces, the wear on carriage and ways is materially reduced. The tailstock can be offset for taper turning.

The manufacturer is prepared to furnish the following extra attachments: Taper attachment, metric transposing gears, extra large spindle bore, rear chuck for supporting bars, metric dials, full swing rest, pipe thread gears, chuck face plates, metric lead and cross feed screws.

Steel Industry of Hungary

The old kingdom of Hungary produced yearly about 2,000,000 tons of iron ore, but the reduced Hungary of the Peace Treaty has only one mine left, that of Rud-Banya, which produces less than 400,000 tons a year, which it is alleged will be exhausted in eight years, says the London *Ironmonger*. Of the former iron and steel industry, only 40 per cent. is left to new Hungary. A blast furnace and rail mill that formerly employed 4000 workmen is now entirely without ore because the mines and fuel that used to supply it are now in Czecho-Slovakia. Of the engineering industry of old Hungary, with a yearly production valued at 212,000,000 crowns and employing 41,000 hands, 90 per cent. will be left to the new state, but less than 20 per cent of the raw material required for the works will be available within its boundaries.

The Witte Engine Works, manufacturer of oil engines, Kansas City, Mo., will erect a foundry, 150 x 200 ft.

What the Outlook Is for Iron and Steel*

Supply Not Caught Up with Demand—Prices Not Relatively High — Increasing Machinery Demands of the Future

BY JOHN A. TOPPING†

WHILE some of the problems involved in readjusting business from war to peace have been successfully met, particularly those pertaining to surplus war supplies and of converting our armies and factories from fighting to peaceful forces of production, thus removing unemployment as a menace—jobs now hunting men, rather than men hunting jobs—there are other problems, both social and economic, overhanging the business world of large moment. They require for solution sound reasoning and co-operation to bring about necessary changes in a sane and orderly manner and with due consideration of the rights and interests of all.

In considering these problems we should not forget that present conditions have resulted from four years of world war destruction and waste. Professor Bogert, of the Carnegie Endowment, in emphasizing this, stated that the total war loss in lives was over 10,000,000 men and that the loss in dollars—both direct and indirect—aggregated approximately $333,000,000,000. In considering these appalling figures, it drives home the thought that it is easier to tear down than to build up; to destroy than replace, so that we should not be discouraged by slow progress in the work of reconstruction. On the other hand, we should be encouraged, not only in having lived through the shock of peace, without disaster, but congratulate ourselves on having maintained surprising prosperity.

Present prosperity is not only surprising from the standpoint of price level, but also by the volume of world's business, our production of steel ingots for March being at the rate of over 45,000,000 tons per annum. But this indicated total for the year will, of course, not be reached, due to interrupted production by strikes, fuel shortage and breakdowns in transportation. In fact, these causes will undoubtedly result in a subnormal output this year, which probability, considered in connection with an abnormal demand, will cause a large tonnage of orders to be carried over into the year 1921.

Mr. Topping then spoke of the improvement in business sentiment through recent legislative enactments and court decisions, such as the United States Steel Corporation's dissolution case; the court decision that stock dividends are not income subject to taxation; the Cummins-Esch bill in providing that present values of railroad property, rather than former costs, shall be considered in determining what is a fair return on railroad investment; and the provision made for the creation of a railroad labor board. He mentioned also the importance of the Webb act and Edge bill—"the Webb act having been more than justified by the creation of a large number of corporations, which are now successfully competing in foreign trade," and the Edge bill having fostered the organization of the First Federal Foreign Banking Association of New York, so that export business "even under existing disturbed conditions of foreign credits and exchange is of astonishing proportions—iron and steel exports alone running at the rate of over $1,250,000,000 per annum." He also spoke of the organized educational activities now at work in many directions, through which such factors in the business situation as social unrest, excess taxation and inflation will be finally disposed of without serious disturbance to business, "because our business structure is well fortified by an absence of speculation and by subnormal stocks of merchandise. Our business structure is also well fortified by a banking system both strong and flexible enough to meet all probable strain, particularly when it is considered that both banking policy and business sentiment oppose further expansion and is favorable to gradual contraction."

In considering the present growing necessities of the world for iron and steel, attention should be directed to the fact that the damming-up process, through unsatisfied demand so strongly operative during the war, continues, because production has not been speeded up to a point of full supply.

Europe, which ordinarily was more than self-contained in its steel supplies, and had heretofore a large surplus available for export, is at present unable to take care of its home requirements, because production is at the lowest ebb ever known. While reliable data are not obtainable, I think it safe to state that Europe's production at present is not in excess of one-third normal—Germany and Austria, whose combined pre-war output of steel was double that of all other European producers, perhaps, doing less; France and Belgium, as small producers, while reported more active, are not factors; in fact, England and America, for months to come, will continue to be the principal world's source of steel supply. A representative of the British National Federation of Iron and Steel Manufacturers recently stated that neither France nor Germany will be serious competitors for iron and steel for several years to come.

No Decrease of Gap Between Demand and Supply

Lack of comprehension or consideration as to the gap between demand and supply is perhaps an explanation of the mistaken opinion heretofore held by a number in the steel trade that prices must decline, as this gap still exists and may be widened, because (aside from a loss in shipbuilding) growth in all other directions seems probable.

In shipbuilding, the pre-war world's estimated annual construction was about 3,000,000 dead weight tons, as compared with the 1919 program of about 8,000,000 dead weight tons, and as soon as the ship losses from war sinkings have been replaced future requirements in steel for ships will undoubtedly drop back to repair necessities and to new construction suggested by growth. As against a loss in steel tonnage for shipbuilding, of possibly 2,000,000 tons, growth is promised by increased requirements in the way of railroad equipment, it being estimated that the present shortage in railway car equipment will require not less than three years of full capacity shop production. One authority has estimated the car shortage at not less than 800,000 cars, to which must be added a large shortage in motive power and track facilities. To give proper emphasis to railroad neglect of upkeep, both in roadbed and equipment, it may be approximately stated that railroad purchases during the past three years have not exceeded 50 per cent of the previous ten-year average.

Increasing Demands for Machinery

Increased demand is also in sight from the makers of automobiles, trucks and tractors, as indicated by factory extensions now under way. In a recent trip across the continent I was greatly impressed to observe that a large percentage of machinery in use for farm work was horse and man-power. I believe that the farmer must soon, either for economic or reasons of compulsion, due to labor shortage, employ to a greater extent than heretofore labor-saving devices; otherwise it will be difficult for the farmer to continue his operations.

That this situation is serious, New York State agricultural reports show a decrease in farm labor occurring last year of 17 per cent. This shortage in farm labor is further emphasized by the Secretary of Agriculture's report, who estimates the average shortage for the entire country to be 28 per cent. To meet this situation, educational propaganda is now being

*From an address made May 4 at Philadelphia before the American Iron, Steel and Heavy Hardware Association.

†Chairman Republic Iron & Steel Co.

employed and rural engineering courses established in many of the State agricultural colleges to educate the farmer in the use of labor-saving machines.

Machinery demands will undoubtedly be stimulated under the influence of the good roads campaign. Not only passenger cars, but trucks and tractors, and—what is of larger moment—increased farm production and profits will be realized through these labor-saving devices.

That the magnitude of the farmer's business may be appreciated I would state that good authority estimates the aggregate tonnage of iron and steel required to supply hardware, nails and fencing used by the farmers far exceeds the aggregate tonnage annually consumed of steel in the construction of our city skyscrapers. The skyscraper, however, and other building requirements, while small by comparison with farm requirements, is large and growing, as well as the demand for housing in all sections, the total of which increased requirements will make our loss from ship construction small by comparison.

Prices Not Relatively High

Fear is felt in some quarters, while recognizing growing demands, that high prices will discourage purchasing, and to an extent this undoubtedly will be true, but not to the extent that would be the case if iron and steel stood alone on the peak of high prices, or if the character of demand was of a less necessitous character. Furthermore, as all values are relative, iron and steel prices by comparison are not high when thus considered; neither are they high as compared with costs, as evidenced by recent financial statements issued by important steel companies. Furthermore, American prices are not high when measured by English or European rates and are not high when measured by what iron and steel will buy in other commodities. Then again, our export prices, which equal domestic rates, have not discouraged business; in fact, export tonnage is in excess of pre-war normal trade. The first quarter of this year showed total sales of over 1,000,000 tons, or at the rate of over 4,000,000 tons per annum. This showing, indicating that world trade buyers not only regard current prices as reasonable from a competitive standpoint, but that, notwithstanding the abnormal depreciation in foreign exchange, with its added burden to costs, foreign consumers are free buyers.

If it be admitted that present prices are the effect and not the cause, then I think it may be concluded that high prices will remain so long as present conditions continue, or until time has wrought the necessary economic changes favorable to liquidation and lower values. This change cannot be affected, in my opinion, until supply exceeds demand, and this condition for iron and steel is not yet in sight; in fact, there is every indication of continued shortage in supply and of further depletion in stocks on hand.

Jobber's Position in the Industry

In considering the growth and prospects of iron and steel, I should be remiss in my obligation, as a producer of these commodities, not to give full credit to the enterprise and industry of the warehouseman and merchant, to whom much credit is due as pioneers in creating demand. For without your help the many new enterprises with unestablished credits could not be conducted. In fact, your facilities are not only necessary to support and encourage new enterprise, but equally essential for purposes of service, not only to the general public but to the larger consumers for emergency wants. I have always believed that the merchant, from a service standpoint, justified his position; furthermore, that the fullest prosperity in any industry could not be realized without the fullest co-operation between manufacturers and distributors.

As an example of the effectiveness of co-operation, in respect to the service performed by American business, no better illustration can be furnished than to call attention to the splendid work performed by the iron and steel trade during the period of the World War.

The World War has ended, but our war work has not; therefore, let us "strive on and finish the work" so that social and economic order may be restored, having the courage and confidence to believe that, through fairness, industry and thrift, peace and good-will among us will be established and our prosperity indefinitely extended.

IN THE IRON COUNTRY

Plans for Summer Meeting of American Institute of Mining Engineers

Secretary Stoughton of the American Institute of Mining and Metallurgical Engineers, has been in the Northwest recently arranging for the summer meeting of the Institute on Lake Superior. This session will begin at noon of August 23rd, at Houghton, and will end on the evening of August 27, at Duluth. Details of the trip of members in the Michigan districts will be in the hands of M. M. Duncan of Ishpening, O. C. Davidson of Iron Mountain and Wm. Kelly of Vulcan; at Minneapolis in those of a committee of engineers there; in Duluth in those of the Duluth Engineers' Club, and on the Mesaba range in those of the Engineers' Club of Northern Minnesota.

The institute has arranged for the charter of the fine passenger ship Tionesta, which will bring some 300 members from Buffalo and adjacent points to Houghton, where it will discharge them on the morning of August 23. That day will be spent in the Keewenaw district. That evening the party will split, part going by special train over the Marquette Range and part in the same manner over the Menominee to Iron Mountain, Vulcan and Norway. The next morning the trains will arrive at Minneapolis, where the day will be spent and where a technical session will be held at the University on Thursday evening. On Friday morning the party will disembark from its trains at the new town of Babbitt on the east end of the Mesaba range, where the Mesaba Iron Co. is engaged in its large construction operations for the concentration of low grade magnetite. A few hours will be spent there and the entire party will be taken by automobiles across the Mesaba range to Hibbing, the entire day being spent en route. This will give a pretty thorough inspection of most of the large Mesaba range operations, including such mines as those of the Eveleth, Chisholm and Hibbing groups. A technical session will be held at Hibbing in the evening. The following morning the party will go to Coleraine, where there will be an inspection of the great washing plant of the Oliver Iron Mining Co. and the enormous open pits in that vicinity. Soon after noon, the party will arrive at Duluth and the remainder of Saturday will be spent at the Duluth, Mesabi & Northern ore docks and the plant of the Minnesota Steel Co. Number 6 D. M. & N. dock is the latest, largest and most modern iron ore shipping pier in existence. There may be a technical session in Duluth that evening and the party will disband, part of the guests going east on the ship Juanita on the following Monday and part visiting the Yellowstone, Glacier National Park and the Butte district.

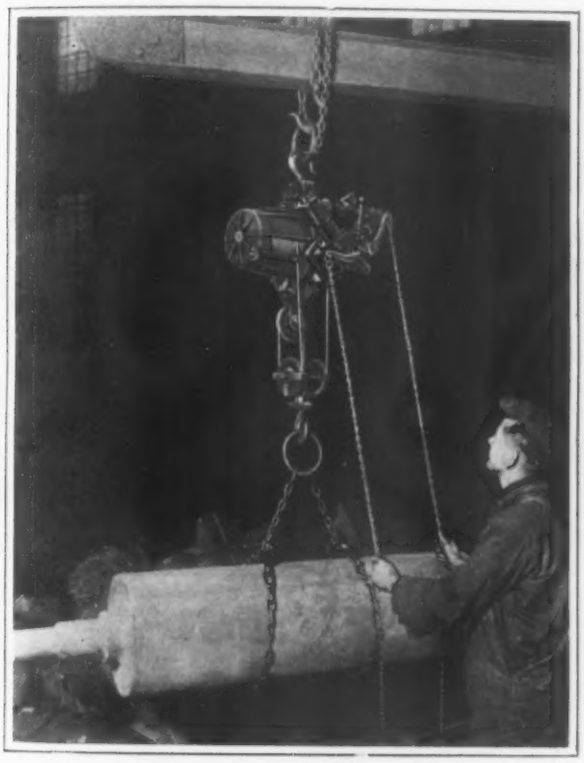
It is expected that some 300 will arrive by steamer at Houghton and that the party will be augmented at that point by rail arrivals from Chicago and surrounding districts, so that it will number on the journey around Lake Superior several hundred more. The trip will be taken at the time when operations in the Lake Superior district are likely to be at the very highest point of intensity and should prove to be of tremendous interest to the institute, which has not visited the region for many years.

The building of mining and quarrying machinery at the plant of the Sullivan Machinery Co., Chicago, is shown in detail in a three-reel film that will be loaned by the Sullivan company to engineering societies and employers who have equipment for showing firlms.

Pneumatic Motor Hoist

Pneumatic motor hoists made in capacities of ½, 1 and 2 tons are announced by the Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago. Each of these hoists is made with two heights of lift as follows: ½-ton and 1-ton hoists, 20 and 40 ft.; 2-ton hoist, 20 and 10 ft. The speed of lift for the ½-ton, 1-ton and 2-ton hoists is 32, 16 and 8 ft. per min. respectively, and the air consumed 1.9, 3.8 and 7.6 cu. ft. per foot lift, respectively.

The hoists are equipped wth a large worm gear drive, the worm being cut to a pitch that locks the drum and holds the load at any point, even when the air is turned off, or the air line breaks. If necessary, the motor can be taken out for repairs while the load is suspended. An automatic stop prevents injury to the load or hoist by shutting off the air just before the



Pneumatic Motor Hoist Made in Capacities of ½, 1 and 2 Tons, and in the Speed of Lift of 32, 16 and 8 Ft. Per Min. A worm gear locks the drum and holds the load at any point whether the air is on or off

cable is fully wound or unwound. The automatic stop can be adjusted or set for any lift, long or short, within the capacity of the hoist. The swivel suspension hooks have solid heads, thereby eliminating the use of nuts. The drum cover contains a permanent eyelet for the temporary cable used in placing the hoist in position, thus leaving the hook free for permanent attachment.

The throttle valve of the motor has a graduated opening, explained as making it easy to control the speed of the motor and start or stop it gradually. The motor is reversed by shifting the eccentric, which is done by throttle chains while the throttle valve is shut off. The cables and drums are placed far apart to prevent the load from twisting or turning. The drums are spirally grooved to fit and support the lifting surface, the lower surface, of the cable. A guide on each drum leads the cable into the spiral groove and prevents climbing, crossing and cutting. The cable is protected by the drum covers which also prevent its climbing, crossing and cutting. The cable is attached to the drum with a large radius bend, so as to prevent its kinking or weakening.

The motor is of the company's close-quarter drill type and is emphasized as economical in air consumpton. The cylinders are double acting, placed at right angles and use a single throw balanced crank shaft, which is connected with the worm.

STEEL MAKING COSTS

Commissioner Murdock Explains the Position of the Government

WASHINGTON, May 4.—About one-half the steel companies have given the Federal Trade Commission assurance of their co-operation in the submission of monthly reports on cost of production, according to Victor Murdock, chairman of the commission. Mr. Murdock told of the progress made in investigations during a hearing before the House appropriations committee. Mr. Murdock explained that since Jan. 1 monthly reports have been requested from all steel producers, and also from coal operators. It was in connection with these monthly reports on coal production costs that the Supreme Court of the District of Columbia recently held that the commission was exceeding its authority.

"We are going into coal and into steel, which, I think, is the most useful thing this commission can do," said Mr. Murdock. "The most useful thing we can do is to take up these basic commodities and apply the remedy of publicity by industries to the situation. To the man who simply sees a part of the general situation, it is very easy to suspect that all sorts of evil things are rampant in an industry. I imagine that when you get the current reports on steel, for instance, covering tonnage production of steel, the price realization, and the relation that the amount in the way of profit has in respect to the rate of return on the investment, you are going to find that steel is probably at this moment responding normally, within fair limits, to the law of supply and demand. I do not know whether that can be said with equal certainty or assurance with reference to coal, but I know that the more real facts you get about the basic industries the better view you will have of your problem and the more sensible and remedial will your solution be.

"What we propose is simply to get the production, the production costs, sale realizations, and the rate of return on the investments that those figures bring out, and not to be stated by companies. A great many companies think we will publish these things and they do not want their secrets exposed. Those individual returns the commission jealously guards, and no one sees anybody's else figures. We do not publish any figures that would identify the companies. We tabulate returns for the whole industry and publish them for the benefit of the people, of Congress, and of the industry itself."

Mr. Murdock interjected a little comment on the Pittsburgh base case which is pending before the commission. He referred to it as one of the investigations having a bearing on the high cost of living.

"All steel is sold f.o.b. Pittsburgh plus the Pittsburgh rate to destination," said Mr. Murdock. "Duluth, Birmingham and Chicago are all contesting that. During the war the War Industries Board provided a double base in the United States—Pittsburgh and Chicago. Mr. Replogle said it did not work. Evidence has been offered to the effect that it did not. However, that is argumentative.

"The question was so big and it entered so vitally into the economic life of the whole country that we invited all parties interested to a hearing, which extended over 11 days.

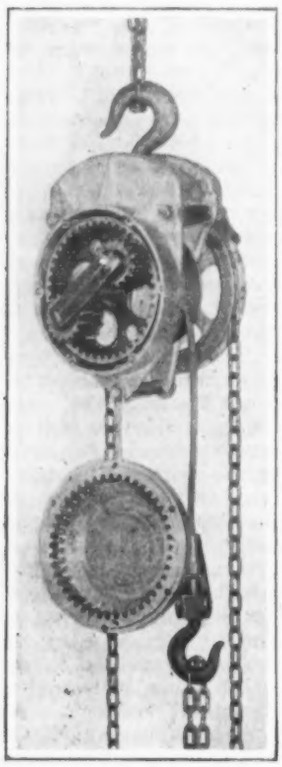
"Some of the greatest legal talent in the country argued it. We have taken all that presentation and are now letting the application take its regular course through the commission which carries it to the board of review. That board will consider it and then make recommendation to a commissioner who will bring it to the commission. In such matters as that, I believe we are most useful. The Pittsburgh base, if it be wrong, and I do not say it is—I have not reached a judgment on that—might well have something to do with the broader problem of prices."

The Iron Mountain Furnace Co. is being organized to construct a charcoal iron blast furnace at Iron Mountain, Mich.

Straight-Line Chain Block

A self-locking, one-ton chain hoist, which is explained as combining the qualities of simplicity, safety, durability and light weight, has been perfected by the Norling Rotary Engine Co., 155 North Clark Street, Chicago. The chain pulley is connected by a crankshaft with twin pinions which engage two internal gears. The outer gear is cast in the cover of the block and is therefore stationary. The interior gear is keyed to the cable drum. The interior pinions have one tooth less than the exterior pinions and consequently give the drum a rotary motion when the crankshaft revolves.

Because of the arrangement of the gearing, the block is self-locking under load. The interior gear cannot rotate under burden because the twin pinions are riveted together and the exterior gear which engages the outer pinions remain stationary. The mechanism contains no ratchets, pawls or other intricate parts which need frequent replacement.



Chain-hoist, Weighing Only 40 Lb., Will Handle a Load of 2000 Lb. The arrangement of the gearing makes the block self-locking under load

The housing and the gear cast with it are made of a new alloy "maluminum" which has a tensile strength up to 32,000 lb., but weighs only about one-third as much as cast iron. Through the use of this metal the company is able to produce a 1-ton block which weighs about 40 lb.

The block contains only three moving parts, crankshaft, planetary twin pinions, and interior gear which is keyed to the hoisting drum. The crankshaft is loosely fitted and is only subject to the torsional moment introduced by the hand-chain. The twin pinions are so placed as to neutralize the radial tooth pressure. The twin pinions and gears are subject to shear parallel to the axis of rotation and this force is equal to the final tooth load, 800 lb., on the 1-ton block. The internal gear is subject to the tooth load mentioned, torsion and a bending moment equal to the load hoisted. Bearing friction is therefore confined to the drum-shaft only and is based on a pressure of about 240 lb. per sq. in.

The block is equipped with 20 ft. of cable and all its moving parts are inclosed and run in oil or grease. The device is based on an invention by Emil G. Johanson of the Norling company, and was designed by G. E. Ehrling, chief engineer.

Youngstown Sheet & Tube Co.'s Stock Dividend

Directors of the Youngstown Sheet & Tube Co. at Youngstown, Ohio, have declared a stock dividend of 15,034 shares of common capital stock, which is now unissued, payable July 1 to holders of record June 20. This disposes of all the authorized common stock, namely $20,000,000. Directors also decided that it was advisable to declare an additional stock dividend, as represented by surplus accumulated since organization of the company, and which will more nearly represent the value of the company's various properties and working capital.

Accordingly, stockholders are asked to approve an increase in the common capital from $20,000,000 to $100,000,000, the increase to consist of 800,000 shares of common, par value $100, at a special meeting June 1. Shareholders are also asked to waive their right to subscribe to $6,000,000 or 60,000 shares of the increased common and to authorize the directors to sell this amount to employees of the company "at such times and under such conditions as the directors may prescribe."

"If the stockholders, at their meeting, vote in favor of increasing the capital stock," states President James A. Campbell, "it is then the intention of the directors to declare a further stock dividend out of this increase in capital and still leave in the treasury a substantial amount of stock to be sold from time to time as the conditions of the company may warrant, for further extensions, the securing of additional raw materials or working capital."

Letters explaining the proposal have been sent to shareholders, one signed by President Campbell and the other by Secretary Walter Meub.

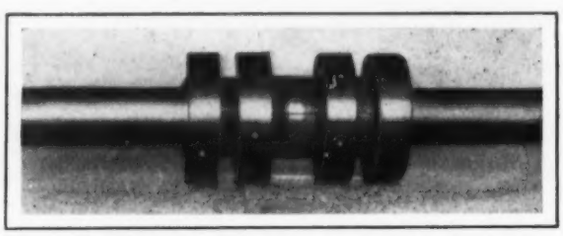
With the increase the corporation will be capitalized at $110,000,000. The present capital is $30,000,000, divided into $10,000,000 of preferred and $20,000,000 of common.

The Youngstown Sheet & Tube Co. ranks with the largest independents in the country and has added appreciably to plant, coal and ore holdings and reserves, while maintaining a nominal capitalization.

With increases recommended by directors and to be approved by stockholders, the Sheet & Tube company, Brier Hill Steel Co. and Trumbull Steel Co., all located in the Mahoning Valley, will have a combined capital of $200,000,000, a figure still, however, substantially below gross assets.

Compression Coupling

Self-alignment and absence of projections to catch the clothing are emphasized as features of the compression coupling shown in the accompanying illustration, and manufactured by the Kentucky Electrical Co., Owensboro, Ky. The coupling consists of a threaded steel sleeve, the threaded portion being on a taper and the nuts threaded to suit. By screwing the nut on the sleeve pressure is brought to bear on the shaft. The sleeve is slotted alternately from opposite ends to take care of variations in the sizes of commercial shaftings.



Coupling Which Operates by Pressure Exerted by Nuts Screwed Upon a Slotted and Tapered Steel Sleeve

The illustration shows the style of coupling used for shaft sizes 7/16 in. to 2 15/16 in. For smaller shafts one ring only on each end of the coupling is used. A wrench is furnished with each coupling.

Will Install Jobbing Mill

The Superior Sheet Metal Co., Canton, Ohio, which is erecting a sheet mill plant, has increased its capital stock from $2,000,000 to $4,000,000 in order to provide a plant of greater capacity than was originally intended. In addition to carrying out its original plans the company intends to install a complete jobbing mill to manufacture blue annealed sheets in heavy gages. Th company expects to have at least four of its mills in operation in July. A meeting of the stockholders will be held May 18 to approve the increase in capital stock.

Publication of a plant newspaper has been inaugurated with the April 17th issue by the employees of the Clark Equipment Co., 1122 South Michigan Avenue, Chicago, manufacturer of tools, trucks, axles and wheels.

Making Progress in Standardization

American Gear Manufacturers Hold Fourth Annual Convention at Detroit—Valuable Reports Presented and Considered—Henry M. Leland Speaks at Banquet

MARKED progress in the work of standardization was made by the American Gear Manufacturers' Association during its fourth annual meeting held at the Statler Hotel, Detroit, April 29-May 1. This was declared to have been the most successful meeting of the organization since it was formed three years ago. One entire day of the three-day session was devoted to hearing reports of the committees on standardization of the various types of gears. A consideration of several of these reports led to lengthy and somewhat lively discussions, particularly that relating to the standardization of herringbone gears. A number of committees did not present complete reports but went into their subjects with considerable detail in order to bring out the sentiment of the members regarding the proposed standardization of the gears under consideration.

There were 95 members registered at the meeting as compared with 91 at the semi-annual meeting held in Boston last October. The present membership, according to George L. Markland, Philadelphia Gear Works, Philadelphia, secretary of the membership committee, includes 86 member companies as compared with eight member companies when the organization was formed. An interesting fact in connection with the association is that it has not lost a single member since its organization. F. W. Sinram, Van Dorn-Dutton Co., Cleveland, who has been president of the association since its inception, was re-elected to that office. The members showed their deep appreciation of his efforts in its behalf by presenting him a very fine gold watch and a chain and charm, the charm being in the form of a cut gear. Its presentation was made at the convention banquet Friday evening. Henry E. Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J., was elected vice-president, and Frank Hamlin, Earl Gear & Machine Co., Philadelphia, was re-elected secretary for two years. As members of the executive committee to serve three years R. P. Johnson, Warner Gear Co., Muncie, Ind.; W. H. Diefendorf, Diefendorf Gear Co., Syracuse, N. Y., and Mr. Markland were named, the latter being re-elected.

Building on Solid Foundation

President Sinram took for the subject of his annual address "Another Year of the Association's Endeavor." He referred to the first two years of the association as the foundation period, and to the one just closed as to the start of reconstruction. The foundation, he said, is substantial and the start of the superstructure is promising and the possibilities are great. Summarizing, he said that the foundation represented membership, having now nearly 10 times the number of interests represented as compared with the Lakewood meeting three years ago, and that the A. G. M. A. is fully representative of the industry. Its membership embraces the manufacturers of cut gears of every description. Another feature of the foundation is the ever-growing spirit of co-operation among member companies. Reflecting this spirit of co-operation are the sectional meetings started within the year by the mill gear producers in various localities. These members, he said, were meeting at regular intervals at Pittsburgh, Cleveland, Philadelphia, Chicago and Boston. While apart from the association's activities, these sectional meetings must indirectly benefit the association, and without the association they would not be possible. He said that the association stood for fair dealing and honest product, and that no small part of the foundation is the recognition and appreciation of the purpose and aims of the association by the engineering world and the trade.

Progress in Standardization

Taking up the superstructure, he said that standardization at once commands attention. During the past year the association had made a distinct start on standardization. A gear standard to be recognized should be the A. G. M. A. standard. The standard should be evolved by the association because the members have the knowledge, both theoretical and practical, and, more important, the experience. It is a task the association cannot shirk or delegate to others. Referring to the standardization organization, Mr. Sinram stated that the association and its various subcommittees had the nucleus for an efficient committee in connection with nearly every type of gear. These subcommittees should meet periodically to facilitate the work. Having reached the point where there are very few gear interests not affiliated, the association is now in a position to perfect its organization. A distinct start has been made toward technical standardization. Commercial standardization is another part of the superstructure. The committee having this in hand made its initial report at the Cleveland meeting last year, and this was referred back to the committee at Boston in October. The committee submitted its second report, which with some modifications was unanimously adopted. The result, the president said, is a definite and specific commercial standardization and a uniform proposal form which should be effected without further delay. Referring to a uniform cost accounting system, Mr. Sinram stated the tendency of the times emphasizes the necessity of giving serious consideration to this subject. The special committee had made an exhaustive investigation of this important subject, the answer to destructive competition.

"Surely we are fortunate in having developed a successful industrial organization under abnormal conditions, and in having it available now at a time when it can be of incalculable value," said the president in conclusion.

Activity of Secretary's Office

Secretary Hamlin indicated the activity of his office by stating that during the past year 16,696 letters and questionnaires were sent out. The membership committee reported that since the last annual meeting 17 member companies and 30 representative members had been added to the organization. One new member, the Durston Gear Corporation, Syracuse, N. Y., was elected to membership during the meeting.

J. C. McQuiston, Westinghouse Electric & Manufacturing Co., chairman of the publicity committee, in a report urged the more general use of the A. G. M. A. monogram in the advertising of the member companies on their stationery, saying that if they did this they were not only boosting the association, but would indicate that they subscribed to its ideals. He said that there was considerable sentiment in the organization toward the establishment of "Doings," the association convention publication, as a permanent publication, and suggested that this be issued every two months during the interval between the annual meetings.

Report on Standardization

The first standardization report was that of the commercial standardization committee, which was presented by Chairman C. C. Crofoot, Crofoot Gear Works, Boston. He submitted a new standard proposal form

containing clauses covering deliveries, terms of payment, guaranty, claims, alterations, etc., to be made a part of the contract with the customer. He explained that this form was identical in wording to the proposal form submitted by the committee and adopted at the Boston meeting, but that some of the sections had been transposed. The chair suggested that were any further changes deemed advisable, they might be made by the executive committee. Mr. Crofoot thought that as the committee had finished its work it might be discharged, but members suggested other work for this committee, such as preparing a standard form for making estimates, and a standard form for the purchase of material. Mr. Crofoot stated that the members must stand together, and that the proposal form must be used by the members in making contracts. He asked members to advise the secretary, should any customer object to the form.

The general standardization committee in a report submitted by its chairman, B. F. Waterman, Brown-Sharpe Mfg. Co., stated that he was making the report with considerable more confidence than he had any previous report for they had got to the point of one adopted standard on composition gearing and had three sets of recommended practices, those on railroad gears and pinions, limits for holes and bevel gears. He said that many felt that the association standards now used are sufficient for the purpose of the members, but that the association is broadening out and to continue to do so must consider the conditions surrounding the industry as a whole if it is to achieve full results.

The report called attention to the fact that the recently organized American engineering standards committee was formed to consider engineering standards in their broadest sense and to act as a clearing house for the standardization work of this character. The association has accepted the joint sponsorship of general standardization with the American Society of Mechanical Engineers, one organization representing the manufacturer and the other the user of gears. The association, he said, will appoint a committee to act in conjunction with a committee of the A. S. M. E. to formulate gear standards, which, if found to meet requirements, will in time be known as the American standard. The gear manufacturer who is responsible for the quality and performance of the gear should take lead in this work. Taking up the standards and recommended practices already adopted, Mr. Waterman stated that these must be revised from time to time to keep pace with developments, and everyone using the standards should call attention to any weak points that may appear in them. The committee had nothing to offer for consideration as an adopted standard or recommended practice but expected that at future meetings action would be taken to strengthen standardization work by changing its recommended practices to adopted standards.

Referring to the adopted standardization of composition gearing, the report stated that this is quite complete and should prove of great value to anyone using this type of gear.

Book of Gear Information

Mr. Waterman also reported that the executive committee had approved the plan considered at the meeting of the standardization committee held last January, that the library committee be instructed to compile a book of gear information to be known as the A. G. M. A. Gear Book, and that the library committee has started on this work. The committee hopes to make this book an important addition to gear literature.

In discussing Mr. Waterman's report Mr. Diefendorf stated it was the privilege and duty of members to give all the information possible to committees in order that they could get on the right track, so that it would not be necessary to make so many changes later.

The report of the bevel and spiral gear committee was submitted by its chairman, A. C. Gleason, Gleason Works, Rochester. The report stated that the committee had tried to work out a rule that was simple and convenient for use, and that it had started on a table which it submitted for the consideration of the members. This table gave the maximum addendum for bevel gears based on the back cone radius of 1-in. This table covered 14½ and 20-in. straight and spiral gears with ratios from 1 to 1 up to 1 to 8. Mr. Waterman stated that this was just the sort of material the association wanted, but that it wanted more of it.

The spur gear committee in a report prepared by F. E. Eberhardt stated that it wished to standardize on what is now being used rather than to adopt new standards.

Sprocket Committee Report

The sprocket committee, through its chairman, C. R. Weiss, Link Belt Co., Philadelphia, submitted tables of dimensions for roller chain sprockets, relative position of wheels, how to figure chain roller drives, speed tables for roller chain, approximate speed ratios and sprocket diameters for single width roller chain wheel with chain of different pitches. Mr. Weiss stated that the roller chain manufacturers are having a harder time getting together on standard practices than the gear manufacturers, and it was suggested that these manufacturers to join the gear makers' association.

No report was presented by the composition gearing committee. In connection with this subject J. R. Triplett, Akron Gear & Engineering Co., Akron, Ohio, stated that some of the Akron rubber companies had been using composition gearing with single plates, but these did not give satisfactory service, and the users asked that the gears be supplied with a hub projecting inwardly giving a metal wheelway and with side plates ⅛-in. wider than standard practice. He said that this change was made and that as a result the efficiency of the gearing was increased 30 per cent.

A report of the herringbone committee submitted by A. F. Cooke, Fawcus Machine Tool Co., Pittsburgh, made two divisions of the subject, one for herringbone gears having right and left hand teeth generated simultaneously in a solid blank, and one for herringbone gears in which the right and left hand teeth are cut in separate operations on solid or separate blanks. Standards were offered for adoption for herringbone gears with teeth generated simultaneously. This report led to considerable discussion as to the use of single and multiple thread hobs in generating herringbone gears, and to the question of adopting as a standard the single helical gear, or a double helical or herringbone gear. Some sentiment was expressed in having one form or the other adopted as standard practice, but the point was raised that the question was not which gear to use, but the form of the herringbone gear to be adopted as standard. The committee will continue its work with a view of having something more definite to submit at the next meeting.

A report on worm gears, worms and spirals submitted by J. C. O'Brien, Pittsburgh Gear & Machine Co., led to an interesting discussion on the standardization of worm gears and members were requested to supply the committee with additional information.

W. H. Phillips, R. D. Nuttall Co., Pittsburgh, chairman of the committee on gears and pinions, electrical railway and mine, stated that the recommended practice in respect to these gears had been submitted to the American Electric Railway Association and nothing had been heard from that association in respect to the matter. He thought that his committee had gone as far as it could go.

Steel for the Gear Industry

R. L. Dodge, New Process Gear Corporation, Syracuse, N. Y., in a report for the hardening and heat treating committee submitted for consideration of the members a list of 15 kinds of forged and rolled steel suitable to the gear industry. He stated that the committee had tried to select those steels that will meet most if not all the needs of the trade, and that it had been the committee's aim to eliminate, as far as possible, steels which overlap each other in physical qualities. The steels included those suitable for case hardening and those which respond readily and give good results for heat treating gears. The committee hoped that the list may be further reduced. The members were asked to co-operate, bearing in mind that with fewer steels standardization will be more easily accomplished. In-

cluded in the list were several nickel chrome and chrome vanadium alloy steels. The first steel listed was a basis open hearth or Bessemer steel, which, Mr. Dodge said, was a good steel for a cheap class of work, being a little better than screw machine stock and having good machine, heat treating and case hardening qualities. The analysis of this steel is carbon 0.15 to 0.25 per cent, silicon maximum 0.25 per cent, manganese 0.60 to 0.90 per cent, sulphur 0.06 to 0.09 per cent, and phosphorous maximum 0.06 per cent. Several of the other steel lists were identical to the steels under the Society of Automotive Engineers' specifications and some had slightly different specifications. Mr. Dodge thought that at least two contained in the committee's list might be eliminated as they overlapped. It was suggested in the discussion that the S. A. E. specifications be followed as closely as possible to avoid confusion. The suggestion was also made that the committee take up the matter with the committee of the S. A. E. as it was thought that the latter would be willing to consider a revision of some of its specifications. In selecting steels for gears Mr. Dodge stated that important qualities to take into consideration were elastic limit, elongation and hardness. Henry Eberhardt suggested that the committee should specify what kind of steel to be used for different classes of work. The committee's report was submitted to the members with a request that they suggest any changes in the list as proposed, and the subject will again be taken up at the next meeting.

Report of Inspection Committee

E. J. Frost, Frost Gear & Forge Co., Jackson, Mich., submitted a report of the inspection committee. As indicating the scope of inspection he stated that there were thirty-six subjects that could be given consideration by this committee and its association with a view of standardization, but he took up only a small part of these. Among the suggestions considered were tolerances of plug gages, and inspection of spur, spiral and internal gears for diameter, eccentricity and irregular teeth. The committee took a 1-in. hole as a basis and recommended that the tolerance on a plug gage for a hole of this size should be 0.00025-in.

Report on Costs

A very complete report on uniform cost accounting was made by J. H. Dunn, R. D. Nuttall Co., chairman of this committee. This included a detailed statement covering a great deal of investigation made by A. A. Alles, Jr., a member of the committee. In discussing this subject Mr. Dunn referred to a number of price quotations made by gear manufacturers which had come to his attention. The figures showed that some manufacturers had made quotations as high as 300 per cent higher than others. He stated that a difference of about 10 per cent in quotations was common, and this variance in price could be considered as normal. He favored a standard cost system as far as possible, and believed that most of the important items in production costs could be standardized, but doubted if a standard system could be used with reference to overhead costs as many companies make other products besides gears. In proposing this standard plan the committee stated that if uniformity is to be maintained it will be necessary that the main divisions be followed in all cases, but that the subdivisions may be changed to meet the requirements of each individual company. The main divisions as proposed include manufacturing costs, commercial expenses, depreciation, distribution of indirect expenses, selling, administrative and general expense, balance sheet accounts, earnings and expenses, and indirect manufacturing expense accounts. The committee asked the members to send in suggestions and the matter will be further discussed at the next meeting.

Labor Conditions

A report of the labor committee was submitted by the chairman, J. B. Foote, Foote Bros. Gear & Machine Co., Chicago. He reviewed the present industrial situation and stated that he believed that in many cases employers had been neglectful of the non-union worker, in that they do very little to induce him to become an advocate of the open shop. The union employee pays some of his earnings in the union and from these he gets some protection in the way of sick benefit and payments during a strike. Mr. Foote believed that owners of open shops should beat the unionist by insuring their employees against accidents beyond the requirements of the State laws, paying the premium on a moderate death benefit, so that the non-union man will feel that he is better taken care of than his union brother. He also believed that it would be a good paying proposition if there were established in every city a clinic or hospital where a non-union machinist could get medical treatment for himself or family when he is unable to pay for medical aid.

During the business session, a resolution was adopted tendering thanks to Brown & Sharpe Mfg. Co., and their representative, B. F. Waterman, for the large amount of interest they had taken in behalf of the standardization work.

Three Papers Presented

The program included the presentation of three papers. The first was by D. G. Stanbrough, general superintendent Packard Motor Car Co., Detroit, who took for his subject "Gears from the Purchasers' Standpoint." During the reading of his paper Mr. Stanbrough stated that one important statement that he had not included was that too much attention cannot be given to accurate machine work on gear housings and mountings. He also referred to the necessity of sand blasting if the work is pickled, as sand blasting discloses cold shuts and fissures which are not revealed by pickling. Another interesting paper was on "Routing of Gears and Machine Parts Through the Factory," by J. A. Urquhart, Brown & Sharpe Mfg. Co., who described the routing plan used by the Brown & Sharpe plant, and illustrated it with lantern slides.

"Hump Method of Steel Treating," was the subject of address by G. W. Tall, Leeds & Northrup Co., Philadelphia. In reply to question Mr. Tall stated that the cost of using Hump process, as far as could be told from investigation at plants where the process was used was 1½c. to 2c. per lb. for hardening and 2c. for drawing, or about the same as with the use of oil or lead pots. During the discussion it was brought out that the Hump process is a detector of low carbon steel, for the reason that if a piece is low in carbon it does not come out properly hardened, and it has to be thrown out to be rehardened. Mr. Peterson, Packard Motor Car Co., stated that in using the Hump method of hardening they occasionally found that a gear would distort, and in breaking it they would discover that the trouble was caused in the forge shop by overheating or some other error. However, he found that the Hump process minimized the errors of forge shop work. He stated that the Packard Company is no longer grinding pinions hardened by this process and that splines so treated need no fitting before being put into the end of the shaft. He stated that various tests showed that steel treated by Hump process showed an elastic limit of 222,000 lb. per square inch as compared with 201,000 if pieces were treated in a lead pot. The Packard Co., he stated, intended to use the process for hardening all gears.

Mr. Leland's Address

Henry M. Leland, president Lincoln Motor Co., Detroit, was the principal speaker at a banquet held Friday evening, at which President Sinram presided. Mr. Leland's subject was the "Science of Manufacturing," but he announced the talk would be on "Knowing How." He stated that these were two of the most important words in the English language. The venerable automobile manufacturer talked shop but in a way that both inspired and instructed his audience, which he deeply impressed by his earnestness.

Going back to the days when he was learning the machinist's trade in a New England shop, and later was making revolvers for use in the Civil war, he said that as a youth he became obsessed by a great ideal. He sought to impress on his hearers the necessity of doing things right. The great art in manufacturing was to have the right equipment and machinery, always the best machine tools to be had for making the product, and then equipping the machinery with the best tools and fixtures. Then he would run the

machinery at the highest possible speed, and make the least possible cuts to get results, and then to see that the feeds were as coarse as possible, all without sacrificing quality. The next thing was to take a boy and train him to do the work right. It was a great art to teach a young boy to do it right.

In this connection he referred to the enormous waste due to the fact that men are not taught to do work right. Men now do not want to be taught right, he said, but, intimating a possible change in the present industrial conditions, he predicted that their attitude would change after they had a long rest and vacation. He spoke of the foolishness of doing work wrong to keep the inspectors busy, and the great waste because of throwing away spoiled work and the cost of fixing up other work improperly done. "It costs a great deal less to make high grade work than to do poor work, and when you have put the latter together you haven't got anything," he said. "A man who is running his factory in a slip-shod way is doing a bad thing for the conscience of his employee." Following up the topic of doing a thing right, he said, "If a piece required a limit of 0.0001-in. put it there and keep it there. If it requires only 0.0002 of an inch don't make it 0.0001-in. tolerance; if you do, you are throwing money away."

"The solution of the problem of the high cost of living is to increase production," he said. "Common sense says we must speed up and do an hour's more work to replace the loss caused during the war. Less work and more pay is the only slogan organized labor ever had, and then we wonder at the high cost of living."

The meeting closed with a luncheon at the Detroit Athletic Club Saturday afternoon, the members being guests of the Michigan members.

Preliminary Program of Industrial Relations Association

Below is the preliminary program for the second annual convention of the Industrial Relations Association of America (formerly the National Association of Employment Managers), in Chicago, May 19, 20 and 21. Sessions will be held in the Auditorium Theater, with a seating capacity of 3641. Hotel reservations will be handled through the central committee, of which the chairman is F. W. Pardee, 721 First National Bank Building, Chicago. The chairman has available a four-page pamphlet registering leading hotels and their rates. A feature of the convention will be table groupings at the luncheons and the dinners. At noon the diners will be grouped according to the topics in which they are interested; in the evening according to the line of industry in which they specialize. Among the latter groupings are those of mines, steel industries and metal trades.

The program is as follows:

Wednesday, May 19

Address of welcome, Cyrus McCormick, Jr., manager of works International Harvester Co., Chicago.

Reply by president, Philip J. Reilly, president Retail Research Association, New York.

"Man and Industry," by P. W. Litchfield, vice-president and factory manager Goodyear Tire & Rubber Co., Akron, Ohio.

Subject Luncheon Meetings and Chairmen: "Americanization," H. T. Waller, secretary Y. M. C. A., Akron, Ohio; "Shop and Works Committees," Arthur H. Young, manager industrial relations International Harvester Co., Chicago; "How Many Hours Per Day," H. T. Wood, superintendent Union Switch & Signal Co., Swissvale, Pa.; "Industrial Relations Department Costs," Dale Wolf, director employment service department Miller Lock Co., Philadelphia; "Co-operative Stores," D. M. Boneisler, American Woolen Co., Lawrence, Mass.; "Personal Aid to Workers," J. W. Hart, director of industrial relations White Motor Co., Cleveland; "Insurance and Bonus Plans," E. B. Tolsted, supervising engineer Independence Bureau, Philadelphia; "Stock Purchase," C. R. Beard, Sears, Roebuck & Co., Chicago; Co-ordination with Educational Institutions," A. C. Vinal, educational director American Telephone & Telegraph Co., New York; "Job Specifications and Job Analysis" Franklyn Meine, personnel research assistant Dennison Mfg. Co., Framingham, Mass.; "Employment Office Methods" First Session, George D. Halsey, employment manager, Cincinnati Milling Machine Co., Cincinnati.

"Incentives and Production," by L. C. Marshall, formerly United States Shipping Board, now dean Chicago University, and by E. W. Hulet, second vice-president White Motor Co., Cleveland.

Sectional Dinner Meetings and Chairmen: "Banks" P. E. Hathaway, manager employment and welfare Northern Trust Co., Chicago; "Automotive Industries," J. M. Eaton, manager Lincoln Motor Car Co., Detroit; "Insurance Companies," C. E. Johnson, Phoenix Mutual Life Insurance Co., Hartford, Conn.; "Printing Trades," S. A. Silcox, director Industrial Relations Bureau, United Typothetae of America, Chicago; "Oil," V. R. Currie, general superintendent employment and service department the Texas Co., Houston, Texas; "Women" Miss Mary B. Gilson, superintendent employment and service Joseph & Feiss Co., Cleveland.

"Linking Up the Worker With the Finished Product," by H. P. Bowle, vice-president Hydraulic Steel Co., Cleveland, and Harry N. Clark, president the Cort-o-scope Co., Cleveland.

Thursday, May 20

"Community Conditions Affecting Labor Stability," by George F. Johnson, vice-president Endicott-Johnson Co., Endicott, N. Y., and C. A. Lippincott, the Studebaker Corporation, Detroit.

Subject Luncheon Meetings and Chairmen: "Mental Tests," Beardsley Ruml, the Scott Co., Philadelphia, Pa.; "Developing Understudies," E. E. Sheldon, supervisor apprentice school R. R. Donnelley & Sons Co., Chicago; "Public Opinion," Judge Philip S. Post, vice-president in charge of public relations International Harvester Co., Chicago; "Plant Papers" M. C. Turpin, assistant manager publicity department Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; "Developing Plant Spirit," Herbert V. Kohler, the Kohler Co., Kohler, Wis.; "Wage Levels," Roger Babson, president Babson's Statistical Organization, Wellesley Hills, Mass.; "Radicalism," William M. Leiserson, labor adjustment board Rochester Clothing Industries, Rochester, N. Y.; "Apprentice Training," Franklin T. Jones, assistant employment supervisor the Warner & Swasey Co., Cleveland; "Shortage of Labor," M. A. Flynn, director of labor Goodrich Tire & Rubber Co., Akron, Ohio; "Developing the Industrial Relations Staff," W. N. Winans, National Carbon Co., New York; "Employment Office Methods," Second Session, George D. Halsey, employment manager Cincinnati Milling Machine Co., Cincinnati.

"The Foreman of the Present and Future," by Leroy Cramer, vice-president the Willys-Overland Co., Detroit; A. C. Horrocks, director of education Goodyear Tire & Rubber Co., Akron, Ohio, and Dudley Kennedy, Philadelphia.

Sectional Dinner Meetings and Chairmen: "Public Utilities," D. W. K. Peacock, personnel department the Philadelphia Co., Pittsburgh; "Department Stores," J. C. Reilly, employment manager Lord & Taylor, New York; "Railroads:" "Garment Trades" Byers Gitchell, labor manager, New York; "Steel Industries," Whiting Williams, Cleveland; "Lumber."

Friday, May 21

"Organized Labor in Industry," by Sidney Hillman, president Amalgamated Clothing Workers of America, New York, and Henry Leland, president Lincoln Motor Co., Detroit.

Subject Luncheon Meetings and Chairmen: "Restaurants," Earl B. Morgan, employment manager Curtis Publishing Co., Philadelphia; "Periodic Rating," W. S. MacArthur, office manager Armour & Co., Chicago; "Vacations," Hugh Fullerton, service director the H. Black Co., Cleveland; "Mutual Benefit Associations," Ralph G. Wells, secretary Boston Employment Managers' Association; "Introducing the New Worker" Philip Stremmle, superintendent National Enameling & Stamping Co., Granite City, Ill.; "Financial and Non-Financial Incentives," Ordway Tead, Bureau of Industrial Research, New York; "Thrift Plans" Boyd Fisher, Detroit; "Housing," D. A. Daugherty, General Motors Co., Detroit; "Budgeting Personal Expenses," C. H. Weiser, engineer personnel work Southwestern Telephone System, St. Louis, Mo.; "Recreation," H. A. Bodine, business manager Industrial Athletic and Recreation Association, Rochester, N. Y.; "Relations of Employment Office and Foremen," E. J. Cole, superintendent Acheson Graphite Co., Niagara Falls, N. Y.; "Employment Office Methods" Third Session, George D. Halsey, employment manager Cincinnati Milling Machine Co., Cincinnati.

"What the Workingman Wants," by Sherman Rogers, former Oregon lumber jack, New York; "What Management Wants," E. W. Rice, president General Electric Co., Schenectady, N. Y.

Business Session, I. R. A. A., chairman, Philip J. Reilly, president.

Sectional Dinner Meetings and Chairmen: "Chemical Industries," Myron J. Jones, service manager Sherwin-Williams Co., Cleveland; "Mines," N. D. Hubbell, director service department W. J. Rainey, Uniontown, Pa.; "Metal Trades," L. R. Clausen, works manager Deere & Co., Moline, Ill.; "Textile Manufacturing;" "Packing Industries," John Calder, manager industrial relations Swift & Co., Chicago; "Shoes," R. P. Hazard Co., Gardiner, Me.

"A National Industrial Relations Policy," by Hon. Gideon Robertson, Minister of Labor, Ottawa, Ont., Can.

The foundry of the Gravois Foundry & Mfg. Co., St. Louis, was burned April 30 with a loss of about $80,000. Included in the destruction were valuable new brass, aluminum and wood patterns. One two-story and two one-story buildings were burned. About 225 employees were thrown out of work. The officers of the company are Thomas Mellow, president; William A. Kammerer, vice-president; William T. Mellow, secretary-treasurer; Thomas Gundelfinger, superintendent. The company also owns the Liberty foundry which will enable it to take care of its customers despite the fire.

Cincinnati Machinists Refuse to Strike

Many Declare Loyalty to Employers, While Some Quit Work—Metal Working Industries Issue Statement—Other News of the Labor World

CINCINNATI, May 3.—The machinists' strike, which it was expected would be in full swing to-day, is not meeting with the support from the workers that was expected by the officials of the union. Up to date 27 shops are affected, and in this number are included only three employing 200 men or over. So far three plants have temporarily closed down, and it is estimated that only about 3000 of the 35,000 men employed in the shops of this city have gone out. All the plants in the Oakley colony, with one exception, are running with full staffs, and in some cases better attendance is reported than has been the case for many months.

In one plant at least, where a strike was declared on Friday, and about 100 men went out, a number of these men returned to work on Monday. Strike votes taken by the employees of a large number of the machine tool plants indicate that the great majority of the men are not in favor of going out, and in many cases resolutions pledging loyalty to the companies have been passed. According to officials of the shops involved, the strike will soon peter out, as they claim that it has not the whole-hearted support of the workers themselves and for this reason cannot be a success. The only result it will have will be to still further delay deliveries of machine tools, which are now in some cases six to eight weeks behind.

Statement of Metal Industries

The Metal Working Industries of Cincinnati have issued the following statement as to their position, saying that there is no just basis for the demands for the following reasons:

First. That the average earnings of employees in the metal-working industry in Cincinnati have increased very considerably over the increase in the cost of living.

Second. That the basic working week for some time past has been 48 hours, having been voluntarily reduced from 60 to 57, then to 55, then to 52½, and finally to 48 hours, all without any reduction in weekly wages.

Third. In view of the fact that the high cost of living can be reduced only by uninterrupted production, we submit that the present attack upon this industry, fostered by outsiders, is unwarranted, un-American and against the best interests of the employees and the whole community.

Fourth. We shall in the future, as in the past, continue to pay a fair day's wage for a fair day's work, rewarding adequately individual initiative, skill and industry.

Fifth. In view of the above statement of facts, we conceive it to be our duty to declare that we find it impossible to give consideration to these demands and cannot recognize or grant them in whole or in part.

Loyal Employees

At the plant of the Cincinnati Milling Machine Co. an anti-strike organization was formed among the employees consisting of a committee of 68 men. This committee called a meeting of all the shop employees of the company on Thursday afternoon to arrange for a secret ballot to indicate how many were in favor of striking and how many opposed. At this meeting the committee of 68 read a resolution, which had been unanimously adopted by that committee at a previous meeting, as follows:

BE IT RESOLVED, That this committee, after careful consideration and debate, believes itself in honor bound to stand by the Cincinnati Milling Machine Co. in the impending emergency.

The result of the ballot of the entire day and night forces of the company resulted as follows: Opposed to strike, 912; in favor of strike, 142; indicating a percentage of 86½ per cent of the employees opposed to striking.

A vote taken at the plant of the R. K. LeBlond Machine Tool Co. resulted as follows: Not to strike, 444; to strike, 192. In connection with the vote at the LeBlond plant, it is interesting to note that when the men were called out by union officials, only 125 responded, despite the fact that about 800 pickets, headed by a brass band, were waiting on the street before the factory to welcome them.

A vote taken at the plant of the Cincinnati Ball Crank Co. showed the following result: Not to strike, 216; to strike, 11; not voting, 32.

Similar votes taken by the employees of other plants show that the big majority of the workers are satisfied with the treatment accorded them by their employers, and have no desire to strike at this time.

Slow Improvement in Coke Region

UNIONTOWN, PA., May 3.—With the passing of another week, little actual improvement is noticeable in the coal and coke business in the Connellsville region. While there has been an improvement in car placements and coal production, really this has not been such as one would expect and indicates unmistakably that the most recent handicap under which the industry has fallen is to be slowly overcome. The week, however, has also seen signs of a runaway market which conservative producers little desire. Demand has been such that available supplies have been gobbled up with little regard to prices, a condition which is to the liking of the brokers with a speculative turn. So far, however, there has not been enough trading to indicate to what extent a runaway market may be expected.

The railroad situation is being cleared up gradually, the Pennsylvania being in the best condition in the region. The Newell yards on the P. & L. E. are still tied up, a situation which is working much difficulty for river region operations served thereby.

One of the interesting features of the situation has been a further demonstration of the value of the underground haulage system installed by the H. C. Frick Coke Co. in the Klondike region. By this means coal is removed from mines as far as seven miles back from the river. The fuel is hauled through the underground passages to mine mouths opening along the river and loaded directly on barges which are transported down the river to the Clairton by-product plants.

Early Settlement Demanded

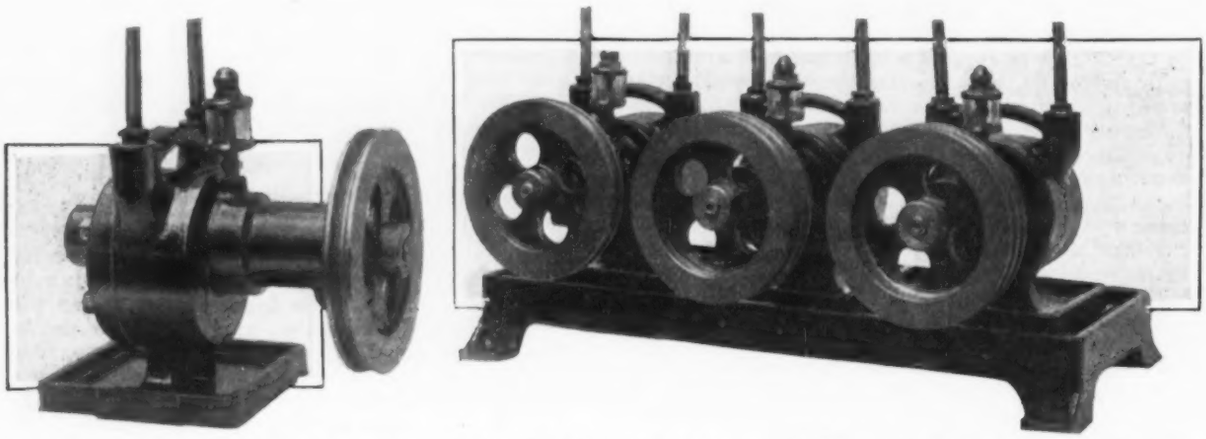
An early settlement of the railroad strike was demanded in a resolution adopted by the Foundry Equipment Manufacturers' Association in session at Pittsburgh last week, and copies were transmitted to R. M. Barton, chairman of the Railroad Labor Board, Washington, and to Homer Ferguson, president of the Chamber of Commerce of the United States, in session at Atlantic City. The resolution follows:

Reports submitted by the members of the Foundry Equipment Manufacturers Association in session here to-day foreshadow the early strangling of the industry by reason of the railroad strike now prevailing and which reflects no signs of early abatement. The members of this association operate plants in widely separated districts of the country, yet they were unanimous in reporting conditions uniformly parallel, threatening the early shutdown of their plants, throwing out of employment thousands of men unless raw materials are received immediately and cars are provided for the shipment of the accumulated finished product. The throttling effect of the present strike on the operation of the plants of the members of this organization is more severe than that incurred throughout the duration of the recent coal strike. Therefore it is recommended that steps be taken immediately to bring about an early resumption of transportation to the end that industry again be restored to its normal status of activity.

High Vacuum Pumps

A high vacuum pump shown in the accompanying illustrations is a recent development of the Newark Engineering & Tool Co., 476 Eighteenth Avenue, Newark, N. J. The pump is designed to eliminate the need of immersing the pump body in oil to prevent leakage, and employs an oil seal internally only, thereby doing away with an external oil seal and saving all the oil used in the outer casing. The manufacturer states that new mechanical features permit of a saving of 80 to 90 per cent of oil and that many troubles which are caused by oil are eliminated.

The pump is especially designed for use in the manufacture of incandescent lamps and has proved, it is stated, adaptable for X-ray, rectifying, vacuum furnaces, scientific research, and can also be used for



High Vacuum Pump with New Mechanical Features Which Are Explained as Effecting a Saving of 80 to 90 Per Cent in Oil. Three of the pumps are shown mounted on a common pedestal

blast. The pump weighs 50 lb. and has a 7½-in. pulley for round belt and a recommended r.p.m. between 275 and 300. It requires a ¼-hp. motor.

One of the accompanying illustrations shows three of the pumps, mounted on a common pedestal, which are adaptable for automatic exhaust machines as used in the lamp industry.

Hardness and Grain-size in Carbon Steels and Heat Treatment of Nickel Steels

WASHINGTON, May 4.—The Bureau of Standards has completed two important steel investigations. The first of these determined the interesting fact that there is but little real relation between the grain-size of carbon steel and its actual hardness. The other covered the important research concerning the heat treatment of commercial nickel steels. The Bureau has not yet completed the third important investigation into the production of nitrogen in electric steel welding.

The investigation of the relation between the grain-size in carbon steels and their hardness was made by Henry S. Rawden, and Emilio Jimeno-Gil, a professor in the University of Spain. Contrary to the definite relation which has been found to exist between grain-size and hardness of some of the simple alloys, this study showed little such relation in carbon steel. Five types were studied under various conditions and the variations in grain-size were produced by annealing for long periods at different temperatures as well as by low-temperature annealing after a preliminary straining of the metal. Two methods were used for obtaining the hardness, the standard Brinell apparatus and a small type, designated as the "micro-Brinell" testing net by which the hardness of individual grains could be measured.

"In general," says the conclusion of the experts, which is to be published as a scientific paper by the Bureau of Standards, "there appears to be no definite relation between the grain-size and Brinell hardness, except in the case of a very pronounced increase in grain-size which is usually accompanied by a decrease in the hardness. The general effect of heating steel, or in annealing it, is to harden it appreciably; this hardness is noticeable in spite of any sharp drop which may accompany an abrupt change of grain-size. The rate at which steels are cooled and consequently the structural condition of the hardening constituent affects the hardness much more than any other factor. Incidental to the study of the hardness of steels coarsened by annealing after permanent strain, some data were obtained relative to the magnitude of the necessary stress required to cause pronounced grain-growth upon annealing such strained metal below the A_1 transformation temperature."

The investigation of the nickel steel problem was conducted by H. Scott and is now being printed as Scientific Paper of the Bureau of Standards No. 376. The transformations of these steels was studied by means of thermal analysis. Concerning the results, the report says: "The Ac_3 transformation, the temperature of which is of direct practical value in heat treatment specifications, is also the most difficult to definitely locate. It is found that slow rates of heating give better definition of this point and that the end of the Ac_3 range, as interpreted from the thermal curves, corresponds to the minimum temperature at which all the ferrite is in solution. The effect of rate of temperature change and of nickel content on the critical ranges of the steels, which approximate 0.40 per cent, content, is shown in curves, and the effect of nickel and carbon on the end of Ac_3 is deduced from the data obtained and that of other observers whose work is discussed. The effect of nickel on the A_1 transformation is to lower Ac_1 by 10.5 deg. C. and Ar_1 by 21.5 deg. C. for each 1 per cent nickel over the range of 0 to 4 per cent nickel. The eutectoid ratio is also decreased by 0.42 per cent C for each 1 per cent nickel added over the same range."

British Company Buys British Rights to Centrifugal Cast Iron Pipe Process

The Stanton Iron Works Co., Nottingham, England, the largest manufacturer of cast iron pipes in the British Empire, announces that it has secured exclusive rights to the De Lavaud process of casting pipe by centrifugal force. The arrangement applies to all parts of the empire with the exception of Canada, where the process is being operated by the National Iron Corporation, Toronto. Construction of a plant of larger capacity has been begun by the Stanton company which is expected to be in operation the latter part of this year. In the United States, Mexico, Cuba and Central America, the exclusive rights to the De Lavaud process are owned by the Centrifugal Cast Iron Pipe Company, Inc., Aeolian Building, New York.

The Aetna Iron & Steel Corporation, incorporated several months ago to construct a sheet mill at Gary, Ind., will increase its capital stock by issuing 50,000 additional shares of no par value. The original capitalization was $2,000,000. The new stock issue, it was announced, will mean the construction of a larger plant than was first intended.

Amalgamated Convention

The Amalgamated Association of Iron, Steel and Tin Workers opened its 45th annual convention on Tuesday at Scranton, Pa., and much interest attaches to the outcome of this gathering and particularly the recommendations of the wage committee, which was scheduled to report Thursday. Suggestions for advances in the base rate ranging from 10 to 50 per cent. have been made by various lodges, for sheet and tin mill workers. Puddlers, it is understood, may seek an advance in the base, though the new rate of $14.88 per ton is 170 per cent above the base. In the sheet mills an extra man to help out the matcher and doubler is asked for in a resolution of one lodge.

After the wage demands are formulated by the convention, they will be presented to the manufacturers, through the Western Bar Iron Association and the Western Sheet and Tin Plate Manufacturers' Association. James H. Nutt, secretary of both organizations, with headquarters at Youngstown, Ohio, planned to attend the convention to arrange the date of the annual wage conference between the Amalgamated and the manufacturers. If the usual custom is carried out, the wage meeting will be held in June at Atlantic City.

The Scranton convention of the Amalgamated is the second which the organization has ever held east of the Allegheny mountains. During the formative days of the association, a convention was held in Philadelphia.

M. F. Tighe, of Pittsburgh, president of the Amalgamated Association, went to Scranton several days in advance of the opening of the gathering. John Williams, former president of the Association and now labor commissioner for iron and steel companies along the Pacific coast, planned to attend.

Boss sheet mill rollers are among the highest paid workingmen in the world, earning as high as $35 and $40 a day. In the Youngstown district, rollers have earned in excess of $50 a day.

The Puddling Advance

The May-June rate for puddling iron of $14.88 a ton, based on a 3-cent card, is an advance from $12.62 paid for boiling during January and February, when the bi-monthly settlement between representatives of the Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers disclosed an average actual sales price for bar iron of 2.55c. The examination to fix the May-June rate was conducted April 27 at Youngstown, Ohio, and covered shipments of bar iron for the two previous months, ending with April 20. Wages of muck mill hands advance about 10 per cent. for the two-month period. The $14.88 rate is the highest since the rate for January-February, 1919, which was based on a 3.10c card. For the March-April, 1920 period, the boiling rate of $13.38 was based on a 2.70c selling price for bar iron, and the new rate is therefore $1.50 per ton higher. Since the first of the year, the card has advanced nine points, to 3c from 2.55c, and six points since the previous examination. The base rate for boiling iron is $5.50 per ton.

After being established since April, 1918, the Youngstown, Ohio, office of the United States Shipping Board was closed last week. Furniture and office equipment were purchased by the Powell Pressed Steel Co., which is establishing offices at Hubbard, Ohio, where its plant will be located. Through the Shipping Board office, steel and other materials were purchased. D. C. Nevins was recently in charge, with E. M. Haines as assistant.

The Carbon Steel Co., Pittsburgh, operated at a loss of $131,435 in the six months ending March 31, last. This showing was due to the steel strike and freight embargoes according to President McKnight. The company's earnings are making a much better showing today. Dividends for the six months amounting to $250,000, were paid from the company's surplus, leaving $3,646,943 surplus.

In the Field of Labor

The Atwood Machine Co., Willimantic, Conn., has reduced working hours from 55 to 50 hours per week, effective May 3.

Some labor trouble has been experienced at the Clinton, Mass., division of the Wickwire Steel Co., but the matter has been adjusted to the satisfaction of the management.

To counteract possible socialistic demonstrations May 1, May Day was observed as "American Day" in Warren, Ohio, and New Castle, Pa., in whose populations iron and steel workers predominate. In both cities patriotic celebrations were held, parades and pageants were conducted and emphasis was placed on loyalty to government.

Employees of the general offices of the Youngstown Sheet & Tube Co. at Youngstown, O., have circulated a petition for the privilege of establishing a "daylight saving plan" during the summer months, going to work at 7 a. m. and quitting at 4 p. m., instead of 8 a. m. to 5 p. m. The Youngstown district is one hour behind New York and Pittsburgh.

At the sixth annual meeting of the Indiana Manufacturers' Association, at Indianapolis, a resolution was adopted indorsing the open shop among the manufacturing industries of the State. J. L. Kimbrough, Muncie, was elected president; William F. Taylor, Indianapolis, vice-president (re-elected); John Faulkconer, Seymour, second vice-president; Fred C. Gardner, Indianapolis, treasurer (re-elected); S. L. Jones, Anderson; F. M. Ruddell, Kokomo; H. C. Stickel, Terre Haute, and Oscar Soderquist, East Chicago, members of the board of directors.

The Union Steel Casting Co., Pittsburgh, in order to provide homes for some of its employees, and which they may acquire at as low a cost as possible, has bought some ground near Aspinwall, Pa., across the Allegheny River from its plant, on which it proposes to build 20 or more houses to be sold to employees at cost. Many employees of the company live in Aspinwall, and find it very hard to secure homes.

The leading brass manufacturers of Connecticut are maintaining a firm stand against demands made by employees for an eight-hour day, an increase in wages of 44 to 75c. per hour, collective bargaining and union recognition.

The Hettinger Engine Co., Bridgeton, N. J., manufacturer of gasoline marine engines, has closed its plant for an indefinite period, owing to demands of machinists and other workers for further wage increases.

The report on the statistics of manufactures for the year 1918 for the Commonwealth of Massachusetts, issued by the director of the Bureau of Statistics of that state, shows that against the 1.3 per cent less men employed in 1918 than in 1917, there was an increase of 8.2 per cent in the number of women wage-earners.

The United States Civil Service Commission announces open competitive examinations as follows: Foreman 14,000-ton press for armor plate and large-caliber guns, $11.84 to $13.28 a day (Form 1371); mine inspector at $2,000 to $3,500 a year (Form 1312); proof director, to conduct testing and approving of guns, carriages, ammunition, etc., at $2,000 to $3,000 a year (Form 1312); chief ballistician, at $3,000 to $3,600 a year, (Form 1312). All of these examinations are by mail. Applicants should apply for the form number given, stating the title of the examination desired, to the Civil Service Commission, Washington, or the secretary of the United States Civil Service Board at the nearest Custom House.

The Donner Steel Co., Buffalo, has started shipments on some of its Eastern business by the Erie barge canal.

Heavy Increase in Iron and Steel Exports

Movement to Foreign Lands Large for March—Japan Appears as an Important Buyer, While Mexico and British India are Also Prominent

WASHINGTON, May 4.—The value of iron and steel exports for March, 1920, jumped to around $23,000,000 over the figures for February, 1920, and $10,000,000 above the March, 1919, totals. The tonnage of the exports showed an even more important increase, rising almost 70,000 tons above the figures of a year ago, and more than 100,000 tons above the figures for February, 1920. March had 27 working days, against 24 in February—but the extra half-week would account for an increase of only 12½ per cent.

Imports of Iron and Steel

	March		Nine Months	
	1919 Gross Tons	1920 Gross Tons	1919 Gross Tons	1920 Gross Tons
Ferromanganese	5,741	2,860	17,905	26,280
Ferrosilicon	231	2,251	5,492	13,187
All other pig iron	924	11,423	1,534	88,824
Scrap, including tin plate scrap	9,107	17,500	70,910	176,287
Bar iron	15	935	1,216	2,462
Structural iron and steel	5	47	2,172	822
Steel billets without alloys	...	2,137	21,646	19,169
All other steel billets	416	416	4,560	6,565
Steel rails	1,127	454	8,493	7,827
Sheets and plates	58	135	486	990
Tin and terne plates	1	38	1	283
Wire rods	7	179	1,936	688
Total	17,632	38,375	135,352	343,384
Manganese oxide	19,300	18,970	431,718	151,098

The iron and steel import figures for March, 1920, more than doubled in tonnage as compared with March, 1919, but were only slightly in excess of the February, 1920, total.

Manufactures of iron and steel which were exported in March, 1920, were valued at $94,756,383. In February, 1920, this figure was $71,893,929, and in March, 1919, $84,621,054. For the nine months ending with March, 1920, these exports aggregated $656,839,516, more than $110,000,000 less than the figures for the same period a year ago—$768,188,320.

The tonnage totals showing exports for March, 1920, 417,216 tons against 308,185 tons in February, 1920, and 344,506 tons in March, 1919. For the nine months ending with March, 1920, the figures are considerably below those for 1919. The nine months' total ending with March, 1920, is 3,003,747 tons, against 3,918,029 tons for the same period a year ago.

Exports, January, 1919, to February, 1920

	Gross Tons		
	All iron and Steel	Pig Iron	Semi-finished Material
January, 1919	360,456	35,793	11,594
February	234,793	20,178	10,407
March	344,506	22,054	8,176
April	408,204	16,300	11,488
May	447,050	32,233	20,771
June	544,580	39,540	46,016
July	287,823	38,373	21,318
August	396,743	36,071	36,162
September	363,505	18,991	37,513
October	302,456	14,108	20,713
November	295,045	21,429	13,211
December	254,676	14,612	21,538
Total	4,239,837	309,682	258,907
January, 1920	333,601	18,468	19,937
February	308,185	15,739	22,693
March	417,216	22,740	30,444

The most important increase is still that for billets, ingots and blooms, which aggregated 30,444 tons for March, 1920, against 22,693 tons in February, 1920, and 8176 tons in March, 1919.

The biggest purchaser in this line was the United Kingdom, which alone took more than half the total 16,285 tons, in March, 1920, against only 450 tons in March, 1919. France, which received 3598 tons in March, 1919, bought none this year; and the export to Italy dropped from 3072 tons in March, 1919, to 2915 tons in March, 1920.

The total export of pig iron, in various forms, remained almost stationary—22,158 tons in March, 1919, and 22,815 in March, 1920. Italy, which bought 12,561 tons in March, 1919, received only 2484 tons this year; while Japan increased her share from 1444 tons in March, 1919, to 4630 tons in March, 1920.

One of the interesting features of the detailed figures is the fact that Mexico and British India turn up as leading purchasers of pipes and fittings. The exports of cast iron pipes and fittings increased from 2211 tons in March, 1919, to 4976 in March, 1920. Mexico bought 324 tons of this a year ago and 1331 tons in March, 1920. British India received 62 tons in March, 1919, and 494 tons in March of this year. The outgo of wrought pipes and fittings rose from 16,188 tons to 25,202 in March, 1920. Mexico's purchases in March, 1919, was 2589 tons, and this year 8919 tons. British India bought 1053 tons in March, 1919, and 2696 in March, 1920.

Exports of Iron and Steel

	March		Nine Months	
	1919 Gross Tons	1920 Gross Tons	1919 Gross Tons	1920 Gross Tons
Ferromanganese	17	75	1,133	1,959
Ferrosilicon	87	...	3,996	333
All other pig iron	22,054	22,740	246,315	202,218
Scrap	125	3,221	1,526	32,396
Bar iron	8,861	4,712	67,658	26,558
Wire rods	13,769	10,636	112,187	75,389
Steel bars	37,595	58,862	353,848	417,982
Billets, ingots and blooms, n.e.s.	8,176	30,444	833,927	223,553
Bolts and nuts	3,631	4,394	27,325	24,283
Hoops and bands	3,832	6,009	42,272	31,197
Horseshoes	256	167	1,383	1,940
Cut nails	374	9	2,715	975
Wire nails	8,136	223	63,225	43,575
All other nails, including tacks	1,928	877	12,889	6,823
Cast-iron pipes and fittings	2,211	4,976	27,958	31,807
Wrought pipes and fittings	16,188	25,202	91,846	154,079
Radiators and cast-iron house-heating boilers	209	604	2,485	5,461
Railroad spikes	1,869	1,792	9,958	12,441
Steel rails	48,955	51,763	422,046	399,379
Galvanized sheets and plates	9,039	10,586	52,666	71,175
All other sheets and plates	3,582	4,338	209,861	26,228
Steel plates	82,305	74,468	522,647	509,313
Steel sheets	1,575	12,730	102,285	105,925
Ship plates punched and shaped	809	4,715	16,574	16,315
Structural iron and steel	28,075	38,463	211,782	235,624
Tin and terne plates	29,244	21,498	191,355	146,208
Barbed wire	7,550	13,507	171,221	86,246
All other wire	17,823	10,205	128,729	114,365
Total	344,506	417,216	3,918,029	3,003,741

Japan comes to the front as the leading purchaser of steel rails, steel plates and steel sheets. In the rail market Japan bought 13,121 tons in March, 1920, against 6060 in March a year ago. France bought 18,131 tons of steel rails in March, 1919, and only 1008 this year. The total steel rail export for March, 1919, was 48,955 tons, and in March, 1920, it was 51,763 tons.

The export of steel plates dropped from 82,305 tons in March, 1919, to 74,468 tons in March, 1920. A year ago Japanese purchases in this line were 26,241 tons; in March, 1920, they were 33,728 tons. Canada received 19,869 tons of steel plates in March, 1919, and 22,449 tons in March of the present year.

Exports of steel sheets revealed a dramatic increase from 1575 tons in March, 1919, to 12,730 tons in March, 1920. Japan received 3446 tons of these wares in

Exports of Machinery

	March		Nine Months	
	1919	1920	1919	1920
Adding machines	$404,927	$528,231	$2,221,062	$2,711,444
Air-compressing machinery	250,111	557,155	2,342,944	2,897,518
Brewers' machinery	5,801	64,502	64,850	231,588
Cash registers	333,541	733,951	1,212,521	3,801,061
Parts of	12,312	42,187	109,992	248,519
Concrete mixers	12,927	95,699	196,801	315,378
Cotton gins	44,079	54,517	179,004	155,833
Cream separators	96,632	89,143	677,535	806,792
Elevators and elevator machinery	213,779	92,244	1,941,497	1,466,949
Electric locomotives	35,687	62,406	223,452	872,153
Gas engines, stationary	48,356	86,768	414,972	589,949
Gasoline engines	2,048,415	3,648,148	25,005,300	22,222,022
Kerosene engines	551,118	2,709,981	6,875,283	6,937,375
Steam engines	1,056,230	3,835,390	19,916,781	30,311,156
All other engines	147,690	187,207	4,019,187	1,542,315
Boilers	511,403	697,127	4,336,241	4,943,509
Boiler tubes	778,000	365,386	6,050,802	3,191,197
All other parts of engines	1,530,151	1,596,274	18,894,490	16,504,290
Excavating machinery	78,281	408,180	729,452	1,120,201
Milling machinery, flour and grist	281,038	150,688	1,226,838	1,065,042
Laundry machinery, power	38,206	105,276	346,220	783,482
All other	16,618	53,714	226,021	331,114
Lawn mowers	54,933	50,797	263,514	268,616
Lathes	1,012,847	1,079,793	6,909,106	6,679,494
Other machine tools	870,663	1,943,230	9,245,941	9,275,127
Sharpening and grinding machines	485,959	475,248	4,585,134	3,365,749
All other metal working machinery	2,646,295	1,652,604	19,280,081	18,246,387
Meters, gas and water	79,864	72,917	453,840	525,164
Mining machinery, oil well	414,589	657,686	2,714,993	2,509,395
All other	947,898	1,158,571	6,918,823	6,575,381
Paper-mill machinery	377,884	251,601	1,700,863	2,150,752
Printing presses	211,798	617,005	1,681,904	4,227,238
Pumps and pumping machinery	786,212	1,083,365	5,024,847	7,215,105
Refrigerating and ice-making machinery	264,324	267,894	1,495,887	1,595,805
Road-making machinery	98,814	120,331	585,518	770,164
Sewing machines	1,515,043	1,767,319	8,557,056	10,262,006
Shoe machinery	185,664	201,309	1,340,603	2,098,189
Sugar-mill machinery	727,287	803,884	8,492,642	12,036,166
Textile machinery	959,956	1,380,622	7,273,976	10,779,931
Typesetting machines	568,866	669,485	1,989,422	2,681,086
Typewriting machines	1,529,546	2,624,012	7,133,299	14,723,816
Windmills	67,985	219,091	694,320	929,039
Wood-working machinery, saw mill	163,203	159,574	1,173,736	638,792
All other	164,334	705,899	955,232	2,571,619
All other machinery and parts of	5,942,616	8,155,004	38,918,216	56,151,760
Total	$22,984,551	$41,281,413	$234,600,208	$280,125,650

March, 1919, and 5953 in March, 1920. Canada was again second with 3102 tons in March, 1919, and 3874 tons in March, 1920.

The exports of machinery for March, 1920, run nearly double the March, 1919, figures, and $9,000,000 in excess of the February, 1920, total. The exports of machinery in March of the present year aggregate $41,281,413, against $22,984,551 in March, 1919, and $32,168,629 in February, 1920. For the nine months ending with March, 1920, machinery exports aggregated $280,125,650, against $234,600,208 a year ago.

Exports of metal-working machinery of various kinds totaled $5,015,764 in March, 1919, and $3,769,161 in February, 1920, and $5,150,875 in March, 1920.

Gasoline engines showed an export increase from $2,048,415 in March, 1919, to $2,293,706 in February, 1920, and $3,648,148 in March, 1920. Steam engines showed an export total of $105,230 in March, 1919, and $4,702,962 in February, 1920, and $3,835,390 in March, 1920.

The total imports of iron and steel in March, 1920, were $3,511,234, against $2,493,802 in March, 1918, and $2,844,771 in February, 1920. For the nine months' period ending with March, 1920, these figures aggregated $25,133,331, against $19,272,311 in the same nine months a year ago.

By tonnage the March, 1920, imports of iron and steel totaled 38,375 gross tons, against 17,632 in March, 1919, and 36,038 in February, 1920. For the nine months ending March, 1920, this aggregated 343,384 tons against 135,352 tons for the nine months ending with March, 1919.

The imports of manganese oxide showed an increase in March over the preceding month. They aggregated 18,970 tons against 4106 in February, 1920. In March, 1919, they were 19,300 tons. O. F. S.

Sligo Iron & Steel Co. Reorganized

Reorganization of the Sligo Iron & Steel Co., with mills at Connellsville, Pa., has just been announced through the company's executive offices at 42 Broadway, New York. A capital of 250,000 shares of no par value has been authorized to provide for plant extensions and additional working funds, and new officers have been elected as follows: President, W. W. Darley; vice-president and treasurer, F. L. Watson; vice-president and works manager, P. T. Duffy; and secretary and assistant treasurer, E. C. Malmberg. These officers with W. A. Feigelstock, president of the Tidewater Steel Products Corporation, 149 Broadway, New York, constitute the board of directors.

By this reorganization, the company proposes to increase its production of sheets and merchant bars from around 5000 net tons per month to 7500 tons. Of this output, the sheet mill will furnish 2000 tons; the 16-inch finishing mill, 2700 tons; the 9-inch finishing mill, 2000 tons; and the muck mill, 800 tons. Construction has already been begun on an addition to the sheet mill and shipping department. In all, the present improvements will cost approximately $60,000.

The Sligo Iron & Steel Co. has been actively engaged in the manufacture of commercial iron and steel products since 1823. At the time of its recent reorganization, the company had a capital of $750,000. It owns at Connellsville 16 acres, of which six are occupied by plant buildings.

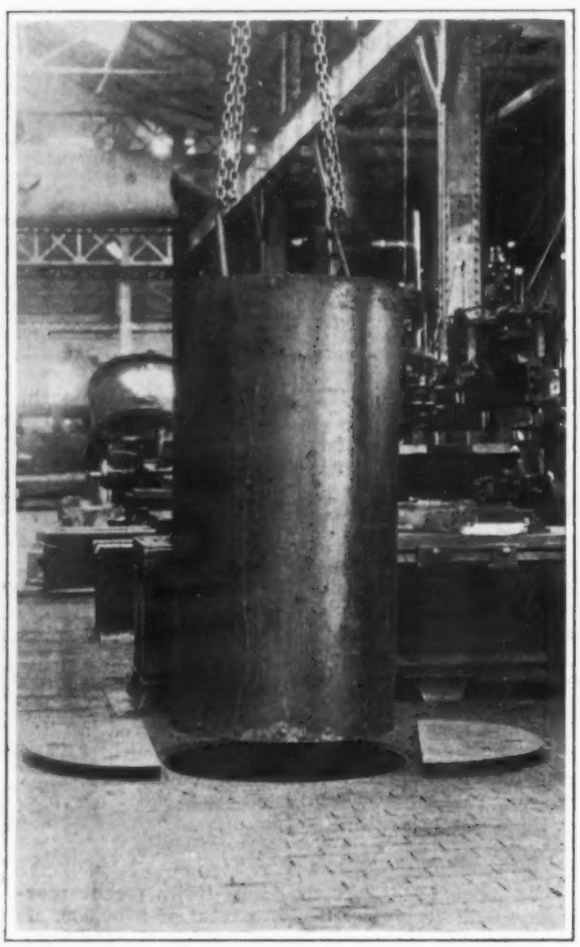
W. W. Darley, who succeeds S. C. Munoz as president, was formerly vice-president of the Sligo company and for many years has been actively engaged in the iron and steel industry. At one time he was general western agent for the Aultman & Taylor Machinery Co., 2 Rector street, New York. F. L. Watson, now vice-president and treasurer, was formerly treasurer of the Sligo company and for the 15 years preceding served in a similar capacity with the American Steel & Wire Co. at Chicago. P. T. Duffy, vice-president and works manager, was previously connected with the Republic Iron & Steel Co., Youngstown, Ohio, and E. C. Malmberg, secretary and assistant treasurer, with the American Steel & Wire Co., as assistant treasurer.

The Manistee Drop Forge Co., Manistee, Mich., has commenced operation in its new plant, consisting of machine shop, forge shop, acid house, boiler house, and office building. The company will manufacture parts for automobiles—crankshafts, camshafts, axles, blank gears, etc.

Shop Floor Buckets

A new method of handling scrap is being used by the Wellman-Seaver-Morgan Co. in its Akron, Ohio, plant and has proved to be very convenient, and to have resulted in a large saving in labor. Under this plan scrap is dumped into large buckets located at convenient points in covered pits in the machine shop floor. The buckets when filled are taken out with an overhead traveling crane and emptied into a railroad car.

The bucket is 6 ft. high, 3 ft. in diameter, of 5/16-in. steel plate, and has a cast-steel bottom. It weighs 1250 lb. empty. There are no outside projections, thus to assure ease in handling and to prevent the bucket from catching on any obstruction when being moved with the crane. On the inside at the top are two lugs, and shooks are attached to these lugs and to the crane chain. A steel lug is cast to the bottom for use in tipping the bucket over. The bottom of the bucket is raised a little above the rim so that the lug does not extend below this rim. The dumping of the bucket in the car is a quick and simple operation. The crane turns the bucket over on its side in the car and then the chain is unhooked from the top lugs and attached to the lug in the bottom. The bucket is then hoisted, discharging the contents.

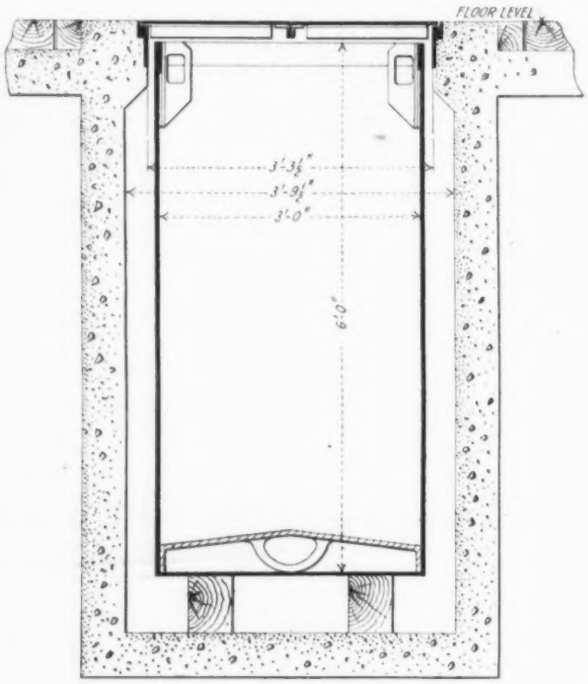


The pits in which the buckets are placed are built of concrete 6 in. thick with a steel collar at the top 6 in. wide embedded in concrete. The bucket sets on a timber frame at the bottom of the pit. The clearance between the bucket and the pit is 1 in. at the top so that very little scrap will fall between the bucket and sides of the pit. Below the collar the diameter of the pit is increased, being 6 in. larger than the bucket so that scrap that falls between the bucket and wall does not become wedged, but drops to the bottom of the pit, where it can be readily cleaned out when necessary.

The cover is of 5/16-in. steel plate made in two halves with no projections on the top, providing a level floor surface over which trucks can run. The cover rests on the steel collar at the top of the pit. A hole in each cover plate is for lifting by hand. The cover is reinforced by 2 x 2¼-in. angles. When scrap is to be emptied into the bucket, half of the cover is turned over by hand, it being unnecessary to remove both halves except when the bucket is to be lifted out of the pit.

The pits, 30 in number, are for the most part located just inside aisles between two machines. Twice as many buckets are provided as there are pits, so that there is always an empty bucket to take the place of a filled one, should the bucket not be emptied immediately. The scrap is mostly in the form of borings and turnings and is shoveled from the floor into wheelbarrows which are emptied into the bucket unless the scrap is close enough to a bucket to be shoveled direct.

The system has worked out so successfully in the Wellman-Seaver-Morgan plant that the company will add scrap buckets to its regular line of product, making in addition to the large size that it is using, a standard bucket one-half the size or 3 ft. deep and 3 ft. in diameter for use in light machine shops not having overhead traveling cranes. The small buckets will be of a size that can be handled by the ordinary type of portable shop crane.



Bucket for Scrap Which Is Located at Convenient Points in Covered Pits in the Machine Shop Floor. Lugs at the top of the bucket are for lifting by crane, and a lug at the bottom for tipping the bucket over

To Build Combustion Engineering Building

The Combustion Engineering Corporation has leased from the Alliance Realty Co. a site with a frontage of 63 ft. at 43-47 Broad Street, New York, on which it will construct a building designed for engineering and banking houses. The wrecking of the old buildings started May 1. This site was once a canal where was located the shipyard which equipped the first ships of the United States navy. The members of the board of directors comprise George E. Learnard, president; George Foster Peabody, chairman of the board; Stuart H. Patterson, Guaranty Trust Co.; George Wilmot, president Wilmot Engineering Co.; J. V. Santry, vice-president, president Schumaker-Santry Co.; J. S. Skelly, vice-president, president Coshocton Iron Co.; William Lloyd, president Coxe Stoker Sales Co.; C. S. Peabody, Ludlow & Peabody; C. J. Peabody, member of Spencer Trask & Co.

Sales of German Steel

That German steel makers were in the market and had actually made sales was published in the London *Ironmonger*, March 6. It created considerable interest in the British steel trade. It was believed at that time, however, that the quantity sold was insignificant and that the disturbed conditions, following the German revolution, would put German works out of the market for some time. The same paper, in its issue of April 10, comments as follows on these developments:

It appears that the quantity sold was not less than 10,000 tons for delivery during March, April and May, and several thousand tons for June-August delivery. The revolution has apparently not affected the ability of the German manufacturers to keep to the terms of their contracts, for not only have deliveries been well maintained, but in several instances the works are reported to be ahead of their commitments.

The business has been confined to relatively few firms in this country and the material purchased was largely for export to India, China and Japan, although limited quantities were also bought for consumption in Britain. The first part of the business was almost entirely in structural steel, and the earlier transactions were made at from £2 or £3 per ton below the prices quoted by British works for similar material, but latterly the Germans have advanced their prices, and now they are only about £1 per ton below British parity.

During the past three weeks two German works which had not previously sold for export have been offering fair quantities to London buyers, and it may be a coincidence that they have approached the same firms with which the works first in the market had opened negotiations. In addition to the orders for steel placed some weeks ago, contracts have been entered into recently involving several hundred tons of steel plates and sheets thinner than ⅜-in., and wire rods, and the Germans are also now offering wire and considerable quantities of wire nails. The following are representative quotations f.o.b. Rotterdam:

Wire rods, 5 mm., £30 per ton.
Wire nails, basis, packed in wooden kegs, £40 per ton.
Steel bars, £27 to £28 10s. per ton.
Steel plates, ¾ in. and thicker, £29 to £30 per ton.
Steel plates, ⅛ in., £34 per ton.
Steel plates, 1/16 in., £35 per ton.
Galvanized wire No. 8, £29 per ton.

The business has been done chiefly through Dutch commercial organizations in Rotterdam, which appear to perform the functions of selling agencies for groups of German works. It is probable also that a good deal of stocks of iron and steel material held by the works at the conclusion of peace has been removed to Holland and is now being disposed of to foreign buyers.

Reduced Production of Rails

The production of rails in 1919 was only 2,203,843 tons, as shown by the bulletin of the American Iron and Steel Institute. Since 1898, when 1,981,241 tons were rolled, the tonnage has not been as small as in 1919, except in 1908, when 1,921,015 were rolled and 1914, when the tonnage was 1,945,095. Production of rails by processes and weight has been as follows:

Production of Rails by Processes, in Gross Tons

Years.	Open-hearth.	Bessemer.	Re-rolled.*	Electric.	Iron.	Total.
1904 ..	145,883	2,137,957	.....	....	871	2,284,711
1905 ..	183,264	3,192,347	.....	....	318	3,375,929
1906 ..	186,413	3,791,459	.....	....	15	3,977,887
1907 ..	252,704	3,380,025	.....	....	925	3,633,654
1908 ..	571,791	1,349,153	.....	....	71	1,921,015
1909 ..	1,256,674	1,767,171	.....	†	...	3,023,845
1910 ..	1,751,359	1,884,442	.....	†	230	3,636,031
1911 ..	1,676,923	1,053,420	91,751	462	234	2,822,790
1912 ..	2,105,144	1,099,926	119,390	3,455	...	3,327,915
1913 ..	2,527,710	817,591	155,043	2,436	...	3,502,780
1914 ..	1,525,851	323,897	95,169	178	...	1,945,095
1915 ..	1,775,168	326,952	102,083	....	...	2,204,203
1916 ..	2,269,600	440,092	144,826	....	...	2,854,518
1917 ..	2,292,197	533,325	118,639	....	...	2,944,161
1918 ..	1,945,443	494,193	101,256	....	...	2,540,892
1919 ..	1,893,250	214,121	96,422	50	...	2,203,843

*Rerolled from old steel rails. Included with Bessemer and open-hearth steel rails from 1904 to 1910 inclusive.
†Small tonnages rolled in 1909 and 1910 but included with Bessemer and open-hearth rails for these years.

A pulverized coal installation and furnace equipment is to be installed in the plant of the Ashtabula Steel Co. by the Fuller Engineering Co. The sheet and pair furnaces will be of the combination type and the annealing furnaces of the underfired type.

British Steel Corporation Is Organized

As forecast in THE IRON AGE of April 29, consolidation of nine steel, coal, shipbuilding and transportation companies of Canada into the British Steel Corporation, with a capital of $500.000,000, has been effected. Colonel W. Grant Morden, a Canadian member of the British Parliament, announced that it was the largest merger of its kind in the British Empire, and second only to the United States Steel Corporation.

Colonel Morden declared that the consolidation would associate the iron and coal deposits of the Atlantic seaboard of the Dominion with the steel-making experience and financial resources of Great Britain.

The capital stock of the corporation will be divided as follows:

Seven per cent cumulative preferred, $50,000,000, of which $37,000,000 is to be issued; 8 per cent cumulative preferred participating, $100,000,000, of which $25,000,000 is to be issued; 7 per cent non-cumulative preferred, $150,000,000, of which $68,000,000 is to be issued; common, $200,000,000, of which $77,000,000 is to be issued.

Included in the consolidation are the Dominion Steel Corporation and its subsidiaries; Nova Scotia Steel & Coal Co., Ltd., and its subsidiaries; Canada Steamship Lines, Ltd., and its subsidiaries; Canada Foundries & Forgings, Ltd., and its subsidiaries; Maritime Rail Company and its subsidiaries; Collingswood Shipbuilding Co., Ltd.; Port Arthur Shipbuilding Co., Ltd.; Halifax Shipyards, Ltd., and the Davis Shipbuilding & Repairing Co., Ltd.

Negotiations are in progress with several other enterprises to enter the consolidation, according to Colonel Morden.

The London advisory board of the corporation, Colonel Morden said, will include Sir William Beardmore, chairman, William Beardmore & Co., Glasgow; Henry Steel, chairman United Steel Companies of Great Britain; Viscount Furness, chairman Furness group of English steel industries; Benjamin Talbot, J. P. Managian, director Furness companies; Major Gen. Sir Newton Moore, formerly of Western Australia, and Sir Treva Dawson, deputy chairman and managing director of Vickers, Ltd.

Drawbacks in Exports

WASHINGTON, May 4.—Official figures have just been compiled showing the drawbacks of duty paid on exported products, made in part of imported materials, covering the calendar year 1919. When one item is deducted the total is comparatively small. The total for the calendar year was $16,963,212.94, of which $14,987,183 was paid as a refund upon the exportation of refined sugar made from imported cane sugar.

The largest amount of drawback paid on any of the items under manufactures of iron and steel during 1919 was in the case of ships built in this country and sold to foreign purchasers. There were 17 of these ships, the total drawback paid amounting to $65,151.24. Of this amount the sum of $29,402.40 was paid on steam engines which had a value of $197,996, while $35,718.84 was paid on machinery valued at $177,398.

The next largest item of manufactures of iron and steel was in the case of steam locomotives. Locomotives exported on which drawbacks were paid totaled 243, the amount of drawbacks being $55,951.43. Included in this total was an item of $13,728.68 which was paid on steel ingots, billets and bars, valued at $92,449; an item of $27,898 paid on metal manufactures, the value of which was $140,899; and an item of $14,318.96 paid on steel sheets and plates valued at $180,795.

The drawbacks on tin plate and manufactures totaled $19,289.50, while those on barbed wire containing zinc ore totaled $18,828.44.

The K. W. Consolidated Mining Co., Sturbridge, Mass., an old lead mine, has just made its first shipment of graphite, amounting to approximately four tons. The output of this old property will be used in the manufacture of lubricants for machinery.

ESTABLISHED 1855

THE IRON AGE

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Crippled Industrial Centers

The city of Detroit, whose rapid industrial progress during the past few years has been one of the most wonderful developments of the country, has now fallen upon conditions which are seriously interfering with manufacturing and other business operations. At a meeting of prominent manufacturers last Thursday, it was asserted that Detroit was passing through an industrial crisis, brought about by lack of transportation. No effort was made to conceal the seriousness of the situation and little hope for early improvement was entertained.

While the strike of the switchmen is the immediate cause of the idleness of thousands of workingmen in Detroit, the plants being unable to obtain electric power, the chief of Detroit's troubles is in the very fact that it has grown so rapidly. Manufacturing plants have expanded, adding building after building, and have taken up land around so completely that little if any room has been left for new tracks or for storage of coal and other fuel and materials. Many companies have gone along depending upon public utilities for their power until suddenly it was found that the public utilities could not meet the demand. For nine days in April all the plants which depended upon this source for their power were idle, and at the close of last week these plants were operating at about 40 per cent of their capacity. Many had been using coal that had been held on cars at the tracks in transit, and with this supply exhausted and no prospect of early settlement of the strike, the outlook was very unfavorable.

No one doubts that in time Detroit will solve its problems, for, with all the able and progressive business men who have helped to bring the city to its present position in the manufacturing world, it will not long be retarded. In addition to increasing its railroad facilities, the building of a great bridge across the Detroit River, as planned by eminent engineers, is confidently expected, and this will be a very important factor in solving the transportation problem. Detroit is not alone in having troubles of this kind. Milwaukee and other cities are similarly situated and the best thought all their leading men can command will be necessary to prevent disastrous conditions in the years just ahead.

Light Output of Rails

Barring two years, 1908 and 1914, the output of rails in the United States in 1919 was the lightest for 21 years, the official report just issued showing a production last year of 2,203,843 gross tons. Thus thirteen years have elapsed without breaking the record of 1906, with its production of 3,977,887 tons. That is a long period of rest even for the rail industry, for it used to be considered remarkable that it took twelve years to break the 1887 production record of 2,139,640 tons.

The relatively light production of rails in the years intervening since 1906 was not, however, entirely unexpected. There was information indicating that unless there was heavy new construction by way of building new road, or at least additional track, the rail demand would not run as heavy as in 1906, and every one has been aware of the fact that not much new trackage has been built in recent years. In the editorial department of THE IRON AGE of Nov. 26, 1908, for instance, there was a somewhat exhaustive study of the rail situation, it being indicated that with the volume of freight traffic then existing rails were being worn out at the rate of something like 1,000,000 tons a year, the heavy outputs of 4,000,000 tons in 1906 and 3,600,000 tons in 1907 having been due in part to the laying of new track and in part to the replacement of light rails that had failed rapidly on account of the heavier rolling stock introduced in immediately preceding years. It was shown that up to Jan. 1, 1908, the production of steel rails minus exports plus imports had been 52,900,000 tons, while if all the rails then in track averaged 90 lb. there would be 50,000,000 tons in track. As the average was not very much below 90 lb., there had not been a great deal of wear up to that time.

Rail replacements in future are likely to be at the rate of about 1,500,000 tons a year, a figure of about this size being suggested by comparing the freight ton-mileage of the country with a factor

derived from the experience of the Pennsylvania Railroad system, which for many years has published annually its freight ton-mileage and the quantity of rails used for replacements. Renewals in gross tons per year have been as follows according to statistics compiled by the United States Railroad Administration and referring, of course, only to the steam roads recently under Government control:

Average, ten years to Jan. 1, 1918	1,405,857
Average, seven years to Jan. 1, 1918	1,377,569
Three-year test period ended June 30, 1917	1,328,316
Year 1918	1,111,638
Year 1919, approximately	1,350,000

The renewals in 1919, however, exceeded the deliveries, as stocks in the hands of the roads were reduced, the actual deliveries having been 1,161,491 tons, or 52.8 per cent of the reported production of 2,203,843 tons. Exports furnished the large proportion of 29.6 per cent, amounting to 652,449 tons.

For comparison with the renewals on steam roads and the exports, it may be noted that the production of rails under 45 lb. per yard was 263,803 tons, while the production of girder and high T rails was 112,712 tons. Small portions of these tonnages may have been exported. Unless such exports were large, only a few tens of thousands of tons of standard rails were left for industrial purposes, for all uses outside of renewals on the steam roads under Government control.

Deducting exports from production, there was left in 1919 only 1,550,000 tons for domestic consumption. In 1906, the year of record output, the production minus exports plus imports amounted to 3,654,794 tons. The difference between 1906 and 1919 is thus 2,100,000 tons. The wear of rails would have to be more than doubled to take up this slack. To furnish the extra demand by laying new track would require very heavy construction work, for 100-lb. rails require 157 tons per mile, meaning over 13,000 miles of track to consume 2,100,000 tons. If many miles of track were laid it would be largely for feeders, not requiring rails so heavy. Unless the mills can better their remarkable export record of 652,449 tons in 1919, therefore, one may expect rail tonnages for years to come to fall usually between the limits of 2,000,000 and 3,000,000 tons a year.

There are some mills that are equipped to roll either rails or sheet bars at will, but the side issue has now become the principal work. In 1906 there was produced 4,000,000 tons of rails and about 2,000,000 tons of sheet bars. Last year there was produced 2,200,000 tons of rails and fully 4,200,000 tons of sheet bars.

The rising tide of British steel exports is seen again in the data for March, which have just reached this country. The March total was 295,716 gross tons, the largest for any month in the last three years. It is necessary to go back to 1916 to find larger figures. For the first quarter of 1920 the average is 262,676 tons per month, as against 204,516 tons per month in all of 1919 and 134,800 tons per month in 1918. The 1916 exports averaged 279,695 tons per month. The recovery must still go considerably farther to approach normal, the 1913 exports having averaged 420,757 tons per month. The principal gains this year over last year in the first quarter has been in pig iron, steel rails, bars, tin plates and galvanized sheets. The galvanized sheet exports are ten times what they were in 1919 and those of steel rails nearly four times larger. In steel bars and tin plates the increase is 50 per cent over 1919. An interesting feature is that the pig iron exports to April 1, this year, have been nearly three times those for the same period in 1919. As to iron and steel imports, the increase is also large thus far this year. For March they were 72,491 tons and for the first quarter the average has been 74,504 tons per month. The 1919 imports were 51,557 tons per month. It is necessary to go back to 1915 to find a period when the imports exceeded the present rate. In that year they were 107,550 tons per month. A still more rapid increase is necessary to attain the pre-war rate, the imports in 1913 averaging 195,264 tons per month.

Electricity in the Metal Industry

In a recent address on "The Age of Electricity," a representative of a leading maker of electrical apparatus called attention to the remarkable growth in the use of electricity in certain basic industries. As an illustration, he cited the use of electric motors in the steel industry, showing that while in 1913 and 1914 this industry added 80,000 horsepower in electric motors for main mill drives, in 1918 and 1919 there was added for the same purpose 400,000 horsepower. In 1914 the total electric horsepower installed was 280,000; five years later this total was 1,042,000 horsepower, or an increase of 300 per cent in five years.

Significant as these figures are, they tell but a portion of the story. Aside from this phase of the use of electricity in the American steel industry, there is the important and familiar use of this agent in melting and refining steel. In three years this industry expanded 100 per cent in the number of furnace installations. While there were 323 such furnaces in the United States on Jan. 1, 1920, there are to-day probably 340. In the opinion of a prominent metallurgist the time is coming when all the principal steel plants of the country will use electric furnaces for duplexing or triplexing. There is also the striking expansion in the use of electricity in the heat treatment of steel. It is not unlikely that progress in the demands of industry will require still more the exactitude in results that are obtainable in this way. There is also the application of electric core ovens to the foundry industry, as well as electric furnaces for enameling. Electricity has also made possible the creation of a new industry in ferroalloys that is of far-reaching importance.

Mention should also be made of the advance of electricity in the non-ferrous industry. The remarkable strides in the electric melting of brass and other alloys and metals were referred to in THE IRON AGE, March 4, 1920. At that time it was shown that 261 electric furnaces were credited to this industry; now there are at least 300 in the United States. While but little has been done in

the heat treatment of non-ferrous metals, the indications are that electricity will play an important part there.

In some lines, apart from the above, events are still more emphasizing the tendency. It is now possible to plate steel with brass or bronze electrolytically, so that door plates and other articles thus made are replacing those of solid material. Electricity is now vulcanizing rubber in special apparatus and the drying of fruit efficiently and on a large scale electrically, so that much of the flavor of the original fruit is retained, will be a commercial fact of the near future.

British Steel Showing

The marked recovery thus far in 1920 in the output of pig iron and steel in the United States over the falling off in 1919 presents a strong contrast to the progress of the British steel industry. The American steel industry in the first quarter of 1920 was producing both pig iron and steel at a rate exceeding any previous record and far in excess of the 1919 production. In Great Britain, the situation presents two unusual features. The pig iron output for the first quarter of 1920 was at the rate of 669,000 tons per month, which contrasts with 617,000 tons per month in 1919 and 855,000 tons per month in 1913. These data reflect the serious effects of the coal and iron ore situation. In steel, however, there is a marked difference. In 1913 the monthly output of steel ingots and castings was 639,000 tons per month and in 1919 it was 658,000 tons per month, showing an increase, whereas in pig iron there was a relative decrease. In 1920, however, the steel production has averaged 764,000 tons per month as judged by the first quarter, a distinct increase over both the 1919 and 1913 production. These figures reveal the prominent part which scrap is playing in the British steel industry. It is also interesting to note that 1919 is the fourth consecutive year in which the steel output exceeds the pig iron. Until 1916 Great Britain produced much more pig iron than steel and for many years this was also true of Germany. The present British pig iron output is at the rate of 8,028,000 tons per year or less than for any year in the last seven. The steel output this year, while much larger than in 1913, is only 400,000 tons larger than the average yearly output for 1914 to 1919.

Although Great Britain shares with the United States the burden of trying to supply world needs in iron and steel, it is perhaps not yet fully appreciated how nearly parallel to our own situation is the condition in the British Isles. Though normally an exporting nation, British manufacturers now would have no trouble in selling their entire production in the home market for two or three years. They know, however, too well the value of export trade, and now there is some attempt to allocate a fixed percentage of output not merely to export trade in general, but in part for the American market. A feature of the situation is the unusual activity of advertising on the part of American newspapers in the British Isles, emphasizing the scope and character of the markets in the cities covered by these newspapers.

REFUSED A REHEARING

United States Supreme Court Ends Dissolution Suit Against Steel Corporation

WASHINGTON, May 4.—The Department of Justice last week filed a petition asking the United States Supreme Court to grant a rehearing in the anti-trust case against the United States Steel Corporation. The petition was signed by Alex. C. King, as Solicitor General, and C. B. Ames, assistant to the Attorney General. It attacked the recent decision of the Supreme Court, which declared that the United States Steel Corporation does not violate the anti-trust statutes. It asked the Supreme Court to reopen the case on appeal and, if necessary, to direct the lower courts to hear new evidence or to "avail itself of the service of the Federal Trade Commission for this purpose."

The Supreme Court made short work of the document. Without even the formality of an announcement from the bench, it entered an order on its docket Monday formally denying the petition.

The petition declared that the reopening should be allowed, despite the fact that the case had already been argued twice before the United States Supreme Court. It based this request on "a sense of official duty, a belief that the principle involved is really not decided by the majority opinion and would require a reversal, coupled with the belief of counsel that the effect of the decision is materially to change and restrict a number of recent opinions of this court construing the anti-trust statutes, and may seriously affect other cases still pending as well as the future enforcement of those acts."

The petition also insisted that the Supreme Court failed to take up one of the principal points of the original Government complaint, which charged that the Steel Corporation itself is a combination in restraint of trade. It declared that while the Supreme Court held that the Steel Corporation did not "achieve a monopoly" it did not pass on the question whether the corporation is a "combination in restraint of trade." The petition went a step farther and declared that, by inference, the Supreme Court "appears to admit that the Steel Corporation is such a combination in restraint of trade."

After reciting the basis of this declaration, the petition said: "Apparently, therefore, the opinion concedes that a crime was committed by the perpetrators of the Steel Corporation. The criminal combination is permitted to continue, however, because (a) Mere size is not a violation of law; (b) It did not achieve a 100 per cent monopoly; (c) It did not oppress competitors; (d) Several Attorneys General failed to file suit; (e) Dissolution involves a risk of injury to the public interest.

"Notwithstanding this consideration," declared the petition, "we earnestly insist that a criminal combination should not be permitted to continue its suppression of competition between the constituent members of the combination. If this was a criminal combination in 1901 (and the opinion apparently concedes it), it was a criminal combination in 1911, and it is a criminal combination now. No criminal is exonerated from punishment because he makes a wise use of property so acquired, and no criminal combination should be exempted from the pains and penalties of the Sherman act because after having achieved its unlawful ends, it merely maintains the fruits of its illegal acts without seeking daily to commit new ones."

The Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, has completed its seven new hot mills; two of these have been placed in operation and the others will be started shortly.

RECOVERING FRANCE

Harassed by Ruhr Coal Strikes—Germany Seeking Business in Brazil.

PARIS, FRANCE, April 16.—The situation of the iron and steel industry remains precarious and was aggravated by interruption of labor in the Ruhr coal fields. Here is what the coal mine strike cost in the north of France. In January the whole production of the concessions of Bruay, Bethune, LaClarence, Ferfay, Ligny-les-Aire, Marles, Noeux and Vendin-lez-Bethune amounted to 669,000 tons. Twenty-one days of strike caused a decrease in the production for March, while the loss in salaries was about 25 millions of francs.

A curious initiative has just been taken by the labor unions of Havre, which have sent a delegation to England to discuss the question of the division of coal tonnage, application of the 8-hr. law and the intensification of coal traffic between France and England. The French workers have taken this action without the intermediary of the government, and hope to reach some agreement with the English militants. They want France to receive a greater supply of coal on which industry depends.

Gradual Increase in Employment

From statistics made public by the Minister of Labor some figures are available which show the steady, gradual resumption of activity. The census was taken, for example, of 50 metallurgical establishments which employed 37,056 workmen in 1914 and the percentages of that number employed at recent dates gives the index of the betterment in manufacturing. These establishments were in the ten stricken departments of France.

They employed, March 1, 8406, or 22.6 per cent, against 14.9 per cent, Oct. 1, 1919; 17.2 per cent, Jan. 1, 1920, 20.6 per cent, Feb. 1, 1920, and 22.6 per cent, March 1, 1920.

Of 229 bolt-making, foundry and wire-drawing establishments, 157 have resumed operations, or 78.5 per cent. These establishments employed, in 1914, 39,612 workers. They employed on March 1, 10,797, or 27.3 per cent.

Of 424 foundries 337 have resumed operations, or 79.4 per cent. In 1914 the establishments employed 64,598 workmen. They now employ 24,783, or 38.3 per cent, against 23.6 per cent Oct. 1, 1919, 33.1 per cent Jan. 1, 1920, 35.3 per cent Feb. 1, 1920, and 38.3 per cent March 1, 1920.

Railroad Car Contracts.

The Compagnie Industrielle de Materiel de Transport, 56 rue Lafitte, Paris, is doing railroad repair work as follows: With the Midi line, 10-year contract for the repairing of from two to four hundred cars. With the State railroads, 10-year contract for the annual repairing of 1300 passenger cars. With the Orleans line, two-year contract for annual repairing of 100 cars. The company also has orders for 60 cars from the State railroads and orders for the Eastern and Orleans lines and the postal service. The company also has received orders for 100 tramway bodies from Bukarest and important contracts for baggage and postal cars in Algeria. The concern also is making tank cars besides agricultural and textile material.

Germany Trying for Brazil

The German steel industry is showing activity in Brazil. Copies of *Jornal do Commercio*, which have just reached Paris, contain a spread advertisement of the famous Thyssen steel company of Germany, which reads: "Centrale Handelsvereenigung, Rotterdam, exclusive exporters of products of the celebrated German factory of Thyssen & Co. Also represent many other concerns and furnish . . . all articles of Solingen and Remscheid, such as cutlery, locks, etc., of which there is an immense stock at Rotterdam ready to ship. All these articles have been specially chosen for the Brazilian market. The special representative of the firm has arrived from Europe, bringing a large supply of samples which are shown at the office of the general agents: Adolf Petersen & Co., rue de Rosario 102, sobrado."

With the advantage gained by the low rate of the mark and the fact that German factories are intact, it is evident the Germans are endeavoring to capture this market, which during the war was supplied by the Americans.

A contract between the French collieries, victims of the war, and a Belgian coal group, is about to be signed. In exchange for the furnishing of 100,000 tons of coal a month, for three months, the French government agrees not to hinder the exportation from France to Belgium of iron ore, phosphate of lime, sulphate and carbonate of soda in quantities necessary for the interior consumption of Belgium.

Purchase of American War Transport

According to the American Chamber of Commerce in London, the British Ministry of Munitions has sold the famous Slough transport depot, including 15,000 cars and stock of spares, for £7,000,000 sterling to a private syndicate.

The first step in the deal was the purchase of the whole of the American war transport in France, consisting of 15,000 cars and wagons for £7,000,000 sterling. The principals in this deal were Lords Inchcape and Furness and Sir Percival Perry, who was formerly European manager for the Ford Motor Co.

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OUTPUT HEAVILY REDUCED

Pig Iron Production in April 17,570 Tons a Day Less

A Net Loss of 31 Furnaces—Ferroalloy Output Also Declines

The effect of the railroad strikes on the blast furnace industry is reflected in the decided reduction in output and in the number of blast furnaces banked or blown out in April.

The production of coke and anthracite blast furnaces in April, a 30-day month, amounted to 2,739,797 gross tons, or an average of 91,327 tons per day as compared with 3,375,907 tons, or 108,900 tons per day in March, a 31-day month, and 2,978,879 tons, or 102,720 tons per day in February, a 28-day month.

The output of manganese ferroalloys also fell off. In April the total of ferromanganese and spiegeleisen was 27,628 tons as against 35,275 tons in March and 28,038 tons in February. The ferromanganese output was 21,028 tons.

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for April, and the three months preceding:

Pig Iron Production by Districts—Gross Tons

	Apr. (30 days)	Mar. (31 days)	Feb. (29 days)	Jan. (31 days)
New York	175,708	210,036	158,710	154,090
New Jersey	6,181	4,789	1,961	0
Lehigh Valley	89,046	90,271	65,881	99,382
Schuylkill Valley	85,617	101,399	94,541	95,569
Lower Susquehanna and Lebanon Valleys	60,505	43,136	32,808	46,670
Pittsburgh district	641,159	746,933	686,903	695,442
Shenango Valley	74,054	162,845	147,358	150,977
Western Pennsylvania	181,446	192,500	163,092	164,616
Maryland, Viginia and Kentucky	106,914	101,248	82,345	79,622
Wheeling district	105,191	143,905	117,597	83,630
Mahoning Valley	169,496	306,720	290,485	299,597
Central and Northern Ohio	272,896	315,551	284,985	267,861
Southern Ohio	65,922	78,486	77,443	64,461
Chicago district	388,063	538,215	466,453	487,840
Mich., Minn., Mo., Wis., Colo. and Wash.	97,488	111,552	99,244	98,487
Alabama	191,389	204,816	185,237	202,236
Tennessee	24,722	23,582	23,836	24,701
Total	2,739,797	3,375,984	2,978,879	3,015,181

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from March, 1919, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
April, 1919	61,289	21,318	82,607
May	51,187	16,815	68,002
June	51,865	18,630	70,495
July	61,503	16,837	78,340
August	68,018	20,478	88,496
September	60,954	21,978	82,932
October	41,796	18,319	60,115
November	57,589	22,156	79,745
December	61,815	23,129	84,944
January, 1920	72,015	25,249	97,264
February	75,230	27,490	102,720
March	80,021	28,879	108,900
April	65,168	26,159	91,327

The figures for daily average production, beginning with January, 1914, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1914—Gross Tons

	1914	1915	1916	1917	1918	1919	1920
Jan.	60,808	51,659	102,746	101,643	77,799	106,525	97,264
Feb.	67,453	59,813	106,456	94,473	82,835	105,006	102,720
Mar.	75,738	66,575	107,667	104,882	103,648	99,685	108,900
Apr.	75,655	70,550	107,592	111,165	109,607	82,607	91,327
May	67,506	73,015	108,422	110,238	111,175	68,002	.....
June	63,916	79,361	107,053	109,002	110,793	70,495	.....
July	63,150	82,691	104,017	107,820	110,354	78,340	.....
Aug.	64,363	89,666	103,346	104,772	109,341	88,496	.....
Sept.	62,753	95,085	106,745	104,465	113,942	82,932	.....
Oct.	57,361	100,822	113,189	106,550	112,482	60,115	.....
Nov.	50,611	101,244	110,394	106,859	111,802	79,745	.....
Dec.	48,896	103,333	102,537	92,997	110,762	84,944	.....

Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the following totals of steelmaking iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total production			Spiegeleisen and ferromanganese		
	1918	1919	1920	1918	1919	1920
Jan.	1,756,208	2,430,022	2,232,455	30,695	32,787	23,957
Feb.	1,620,254	2,209,470	2,181,679	26,114	28,105	28,038
Mar.	2,349,419	2,277,507	2,480,668	39,122	26,644	35,275
Apr.	2,411,488	1,838,677	1,968,542	35,511	17,308	27,628
May	2,513,577	1,586,805	.....	54,633	14,604	.....
June	2,407,166	1,655,944	.....	44,844	14,254	.....
July	2,456,693	1,906,604	.....	51,762	14,805	.....
Aug.	2,509,357	2,108,566	.....	54,009	17,419	.....
Sept.	2,507,381	1,828,613	.....	66,275	20,631	.....
Oct.	2,594,277	1,295,690	.....	70,379	20,238	.....
Nov.	2,501,867	1,727,656	.....	59,638	19,964	.....
Dec.	2,524,794	1,916,249	.....	49,435	15,718	.....

The furnaces blown in include one Lackawanna in the Buffalo district; three Bethlehem in the Lehigh valley; one Delaware River in the Schuylkill valley; two Steelton in the lower Susquehanna valley; one Colebrook and one North Cornwall in the Lebanon valley; one Carrie in the Pittsburgh district; one Hubbard in the Mahoning valley; No. 3 Joliet in the Chicago district; one Gadsden and one Vanderbilt in Alabama, and the Chattanooga stack in Tennessee.

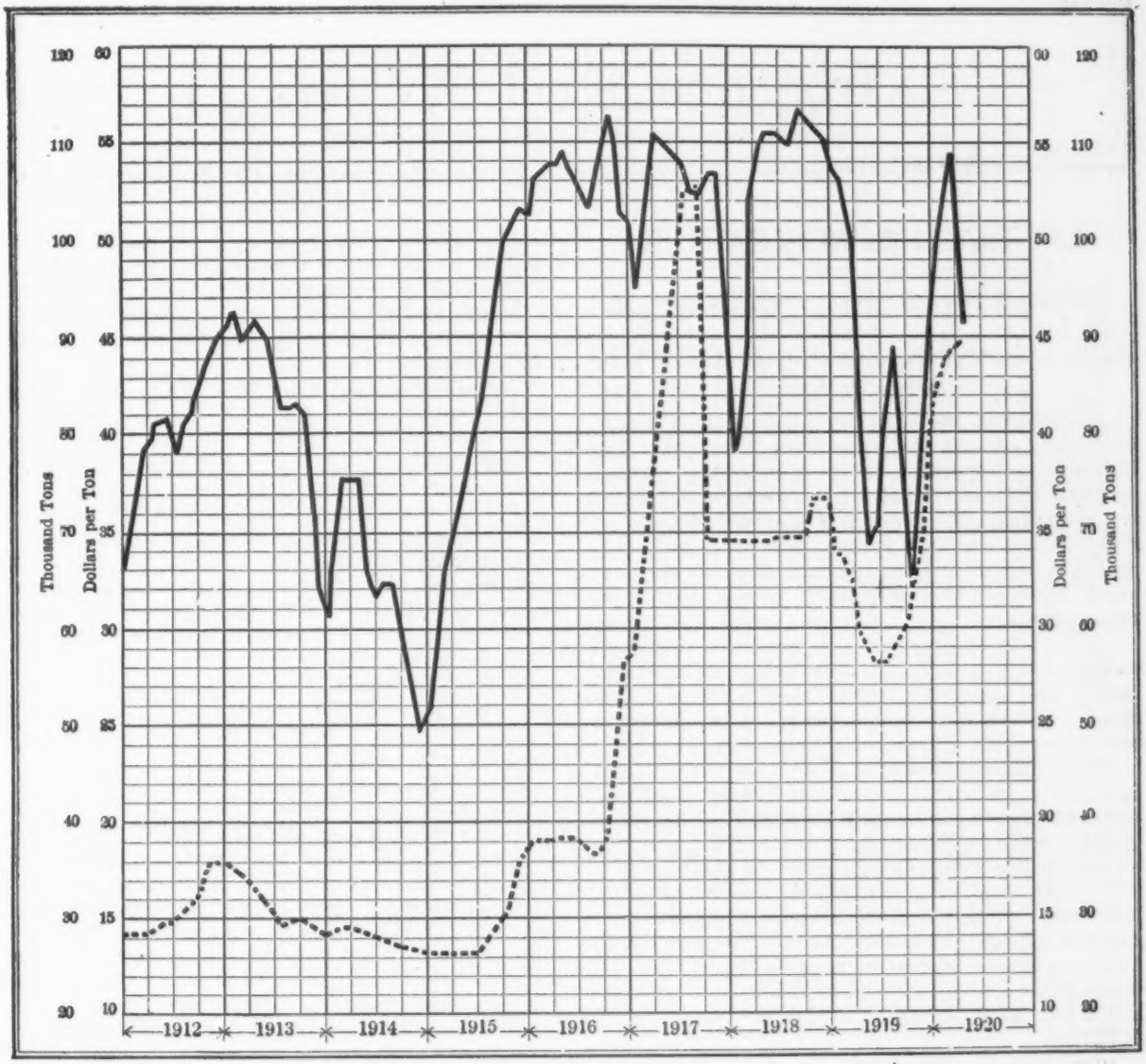
Among the furnaces blown out are Claire and Sharpsville in the Shenango valley; one Mingo in the Wheeling district; two South Chicago (new) and one South Chicago (old) in the Chicago district; one Madeline in Indiana; one Minnesota Steel stack in Minnesota; Alabama City and City furnace in Alabama, and one Allen's Creek in Tennessee. During the month 36 other furnaces were banked and still inactive May 1.

Capacities in Blast May 1

The following table shows the number of furnaces in blast May 1 in the different districts and their capacity, also the number and daily capacity in gross tons of furnaces in blast April 1:

Coke and Anthracite Furnaces in Blast

Location of Furnaces.	Total stacks	May 1: In blast	May 1: Capacity per day	Apr. 1: In blast	Apr. 1: Capacity per day
New York:					
Buffalo	22	19	5,280	18	6,645
Other New York	4	3	575	3	625
New Jersey	4	2	205	2	280
Pennsylvania:					
Lehigh Valley	18	13	4,210	10	2,660
Spiegel	2	2	220	2	220
Schuylkill Valley	14	11	3,155	11	3,315
Lower Susquehanna	8	4	1,250	2	630
Ferro	2	2	135	2	135
Lebanon Valley	9	5	725	4	625
Ferro	1	1	45	1	45
Pittsburgh District	53	46	20,595	49	22,165
Ferro and Spiegel	5	2	410	3	630
Shenango Valley	27	7	2,035	17	5,560
Western Penn	27	21	6,050	19	5,755
Spiegel	1	0	0	1	75
Maryland	5	5	1,560	5	1,380
Wheeling District	15	8	3,890	11	4,565
Ohio:					
Mahoning Valley	27	14	4,740	23	9,910
Central & North	26	19	8,455	23	10,275
Southern	16	12	2,110	13	2,455
Illinois and Indiana	40	28	11,030	35	18,165
Ferro	1	1	35	1	50
Mich., Wis. and Minn.	13	7	2,260	8	2,700
Colo., Mo. and Wash.	8	3	920	3	1,000
The South:					
Virginia	17	9	1,225	9	1,225
Kentucky	7	5	860	5	850
Alabama	45	23	6,365	23	6,835
Tennessee	17	9	800	9	810
Total	434	281	89,140	312	109,585



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

Diagram of Pig Iron Production and Prices

The fluctuations in pig iron production from 1910 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace at Chicago, and No. 2 X at Philadelphia. They are based on the weekly quotation of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1916—Gross Tons

	1916	1917	1918	1919	1920
Jan.	3,185,121	3,150,938	2,411,768	3,302,260	3,015,181
Feb.	3,087,212	2,645,247	2,319,299	2,940,168	2,978,879
Mar.	3,337,691	3,251,352	3,213,091	3,090 243	3,375,907
Apr.	3,227,768	3,334,960	3,288,211	2,478,218	2,739,797
4 mos.	12,837,792	12,382,497	11,232,369	11,810,889	12,109,764
May	3,361,073	3,417,340	3,446,412	2,108.056	.....
June	3,211,588	3,270.055	3,323,791	2,114,863	.....
July	3,224,513	3,342,438	3,420,988	2,428 541	.....
Aug.	3,203,713	3,247.947	3,389,585	2,743,388	.....
Sept.	3,202,366	3,133,954	3,418,270	2,487.965	.....
Oct.	3,508,849	3,303,038	3,486,941	1,863,558	.....
Nov.	3,311,811	3,205,794	3,354,074	2,392,350	.....
Dec.	3,178,651	2,882,918	3,433,617	2,633,268	.....
Total, yr.*	39,039,356	38,185,981	38,506,047	30,582,878	.....

*These totals do not include charcoal pig iron. The 1918 production of this iron was 347,224 tons.

Blast Furnace Notes

The Mississippi Valley Iron Co. has built a new stack of 350 tons daily capacity which it expects to blow in early in May.

In the Shenango Valley during April there were 10 furnaces banked or blown out, most of them still inactive on May 1.

There were 10 furnaces banked during April in the Mahoning Valley, Ohio.

Several furnaces are reported as operating at half or slow speed during April.

Canadian Steel Corporation Plans

Erroneous statements in regard to the plans of the Canadian Steel Corporation, Ltd., Ojibway, Ont., have been published in Canadian newspapers. The company's dock will be completed at an early date; in fact, it is now completed except finishing the hydraulic dredging. The foundations for two blast furnaces are in and the steel work is being fabricated and will be erected this summer. The company is erecting its main machine shop and field fence shop. Beyond these statements, nothing can be said as to the operations of the company.

A catalog printed in Japanese has been issued by the General Commercial Co., Ltd., Yokohama, Japanese agents of the Wright Mfg. Co., Lisbon, Ohio, maker of hoists.

Iron and Steel Markets

LITTLE IMPROVEMENT

Railroad Strike Hampers Pittsburgh

Big Drop in April Pig Iron Output—Lower Steel Prices in West

Considering the industry as a whole, railroad shipments of iron and steel have improved. The outstanding exception is the Pittsburgh district and the Valleys. Much of the betterment is due to concentration on routing and on making up solid trains, for the return and replacement of railroad labor is proceeding slowly. Against fresh shutdowns of consumer plants, there are resumptions.

The state of operations at furnaces and steel works is dependent on accessibility to raw materials and on the control of railroad yard movements. While some plants are operating at 80 per cent of capacity, others are not above 20 per cent.

Pig iron production for April dropped to 91,327 tons daily from the average of 108,900 tons per day for March. The 312 furnaces in blast on April 1 were producing at a rate of 109,585 tons daily, but the number of furnaces in blast on May 1 was 281, producing at a rate of only 89,140 tons. The total output for April was 2,739,797 tons against 3,375,907 tons for March. The number of furnaces blown out or banked in April was 47, while those blown in in the month totaled 16, making a net reduction of 31 in the number of active furnaces.

Troubles of foundrymen have not diminished and the difficulty in obtaining delivery of pig iron and coke is resulting in extraordinary expedients being adopted to prevent cessation of operations. There is considerable demand for iron for prompt shipment, but no large sales have been made. Prices are firm and more furnaces have advanced quotations, usually, however, without recording sales.

The strike of dock laborers at the head of the Lakes has been settled. The machinists' strike at Cincinnati is being participated in by a small percentage of the employees. About two-thirds of the molders at Chicago accepted a counter offer of employers.

Geographically divergent opinions as to market tendencies are developing. The Central West apparently does not feel that the further postponement of deliveries will necessarily make for market strength but that when mills are again running under full steam they will be able to absorb proffered business.

The closing of the gap between the Steel Corporation prices and those of the independents is predicated on the marked diminution in further shipbuilding activity, on little additional tank work for the oil fields because oil is so rapidly going into consumption as not to tax storage facilities, on the postponed railroad buying and on such local conditions as the wage advances in the Chicago building trades and the deterrent which these are to an expansion of building operations. Plates have been sold for the last half delivery at 3c., Pittsburgh; quotations of 3.25c., 3c. and 2.75c., Pittsburgh, are reported commoner on shapes and a minimum of 3c. has been named by Eastern independent producers on bars, with 2.75c. in exceptional cases.

For seven tankers for a Pacific Coast yard the Steel Corporation will supply 27,000 tons of plates and a Lake shipyard is inquiring for 10,000 tons of ship material. Seattle is to build a pipe line taking about 18,000 tons of plates.

The leading items of railroad buying include 500 stock cars for the Burlington, 1000 box car bodies for the Baltimore & Ohio and 35 passenger cars for the Rock Island, representing about 10,000 tons of steel to be supplied by the Steel Corporation, and the Northern Pacific has ordered 71 locomotives. The American Bridge Co. will erect the Cincinnati Southern bridge at Cincinnati, taking about 15,000 tons. Four standard section rail inquiries total 21,500 tons, one of these for 15,000 tons.

Sheet mills of the American Sheet & Tin Plate Co. are operating at hardly 20 per cent of capacity and some of the company's tin plate mills are working at about the same rate. A Cleveland mill has sold blue annealed sheets at 6.25c. and black sheets at 8c. Some large tin plate contracts with the can makers have been made at the regular price of $7 per base box, but other tin plate consumers have paid $8 and $8.50 per box. The probable slow return to normal operations is expected to curtail the pack of fruit and vegetables.

A maker of iron pipe has advanced small sizes $20 a ton, the lap weld sizes $16 a ton and oil well tubular goods $10.

Both blast furnace and foundry coke have sold for $12. The reduction in output has not balanced with the banking of furnaces and curtailed foundry operations.

Traffic congestion has reached an almost hopeless state in England and on the northeast coast fully 100,000 tons of material cannot be moved. Some steel extras have been advanced 100 per cent. Owing to high British prices, orders for iron and steel castings have been placed in Holland. Freight rates from Great Britain to the Orient have been increased 25 per cent and a similar advice to India is expected by July 1. Lorraine works are declining to deliver pig iron sold months ago at low prices, charging the Allies with failure to force Germany to supply the necessary fuel.

Pittsburgh

PITTSBURGH, May 4.

Actual facts are that the Pittsburgh & Lake Erie Railroad is still down tight as far as moving freight is concerned and is also having great delay in passenger service. The Baltimore & Ohio is doing fairly well in moving freight, subject to delay, while the Pennsylvania is doing better than it has at any time since the strike started. Why persistent optimistic reports are being put out by railroad officials and printed in the daily press is hard to understand and local shippers are pretty well disgusted over the en-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	May 4, 1920	Apr. 27, 1920	Apr. 6, 1920	May 6, 1919
No. 2 X, Philadelphia‡	$47.05	$47.05	$47.05	$31.90
No. 2, Valley furnace†	43.00	43.00	43.00	26.75
No. 2, Southern, Cin'ti†	45.60	45.60	43.60	30.35
No. 2, Birmingham, Ala.†	42.00	42.00	40.00	26.75
No. 2 furnace, Chicago*	43.00	43.00	43.00	26.75
Basic, del'd, eastern Pa.	44.80	44.80	44.80	29.65
Basic, Valley furnace	43.00	43.00	42.00	25.75
Bessemer, Pittsburgh	43.90	43.90	43.40	29.35
Malleable, Chicago*	43.50	43.50	43.50	27.25
Malleable, Valley	43.00	43.00	43.00	27.25
Gray forge, Pittsburgh	42.40	42.40	42.40	27.15
L. S. charcoal, Chicago	57.50	57.50	56.50	38.85
Rails, Billets, Etc., Per Gross Ton:				
Bess. rails, heavy, at mill	$55.00	$55.00	$55.00	$45.00
O.-h. rails, heavy, at mill	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh	60.00	60.00	60.00	38.50
O.-h. billets, Pittsburgh	60.00	60.00	60.00	38.50
O.-h. sheet bars, P'gh.	80.00	80.00	80.00	42.00
Forging billets, base, P'gh.	80.00	80.00	80.00	51.00
O.-h. billets, Philadelphia	64.10	64.10	64.10	42.50
Wire rods, Pittsburgh	70.00	70.00	70.00	52.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	4.25	4.25	4.25	2.595
Iron bars, Pittsburgh	4.25	4.25	4.25	2.35
Iron bars, Chicago	3.75	3.75	3.75	2.50
Steel bars, Pittsburgh	3.75	3.75	3.75	2.35
Steel bars, New York	4.02	4.02	4.02	2.62
Tank plates, Pittsburgh	3.75	3.75	3.75	2.65
Tank plates, New York	4.02	4.02	4.02	2.92
Beams, etc., Pittsburgh	*3.10*	3.25	3.25	2.45
Beams, etc., New York	*3.27*	3.52	3.52	2.72
Skelp, grooved steel, P'gh.	2.75	2.75	2.75	2.45
Skelp, sheared steel, P'gh.	3.00	3.00	3.00	2.65
Steel hoops, Pittsburgh	5.00	5.00	4.00	3.05

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	May 4, 1920 Cents	Apr. 27, 1920 Cents	Apr. 6, 1920 Cents	May 6, 1919 Cents
Sheets, black, No. 28, P'gh.	5.50	5.50	5.50	4.35
Sheets, galv., No. 28, P'gh.	7.00	7.00	7.00	5.70
Sheets, blue an'l'd, 9 & 10	4.50	4.50	4.50	3.55
Wire nails, Pittsburgh	4.00	4.00	4.00	3.25
Plain wire, Pittsburgh	3.50	3.50	3.50	3.00
Barbed wire, galv., P'gh.	4.45	4.45	4.45	4.10
Tin plate, 100 lb. box, P'gh.	$7.00	$7.00	$7.00	$7.00
Old Material, Per Gross Ton:				
Carwheels, Chicago	$37.00	$37.00	$37.00	$21.00
Carwheels, Philadelphia	40.00	40.00	40.00	22.00
Heavy steel scrap, P'gh.	25.00	25.00	27.00	14.50
Heavy steel scrap, Phila.	24.00	24.00	24.50	15.00
Heavy steel scrap, Ch'go.	*23.00*	23.50	23.50	15.75
No. 1 cast, Pittsburgh	32.00	32.00	34.00	17.00
No. 1 cast, Philadelphia	38.00	38.00	38.00	21.50
No. 1 cast, Ch'go (net ton)	**37.50**	37.00	37.00	20.00
No. 1 RR. wrot, Phila.	*34.00*	35.00	35.00	21.00
No. 1 RR. wrot, Ch'go (net)	*26.50*	27.00	27.00	15.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$11.00	$11.00	$10.00	$3.50
Furnace coke, future	11.00	11.00	10.00	4.00
Foundry coke, prompt	**12.00**	11.00	11.00	4.00
Foundry coke, future	**12.00**	11.00	11.00	4.50
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	19.25	19.25	19.50	15.50
Electrolytic copper, N. Y.	19.25	19.25	19.25	15.25
Zinc, St. Louis	*7.95*	8.00	8.60	5.92½
Zinc, New York	*8.30*	8.35	8.95	6.27½
Lead, St. Louis	8.40	8.40	8.75	4.60
Lead, New York	8.75	8.75	9.00	4.85
Tin, New York	*60.25*	60.50	63.25	72.50
Antimony (Asiatic), N. Y.	11.00	11.00	11.37½	6.62½

The above prices are for domestic delivery and do not necessarily apply to export business.

couraging reports printed, when they know the actual situation is that the freight movement here is practically as bad as at any time since the strike started.

The Pittsburgh & Lake Erie Railroad has been out of business for nearly a month, and concerns located on that line, notably the Jones & Laughlin Steel Co., report that they have not moved a ton of freight for three weeks. The terminal of the Pittsburgh & Lake Erie is Youngstown, Ohio, where it connects with the main line of the Erie Railroad for Cleveland, and the freight situation on the Erie Railroad is as bad as on the Pittsburgh & Lake Erie. Shippers now report that the railroads are turning down requests for box cars, having supplied all they can, and the result of this will be a great many finishing mills and other manufacturing plants will probably close by the end of this week.

The Pennsylvania Railroad is hauling solid trainloads of freight, but with delay, and the Baltimore & Ohio is doing the same. These two roads promise that by the end of this week they will be in pretty good shape, but that remains to be seen. Some switchmen who are out on strike are showing a very nasty spirit and one that is bound to come back on them. An instance is that of a large blast furnace interest in the Shenango Valley which had a trainload of coke within a few hundred feet of its blast furnace, but the switchmen absolutely refused to operate the switches, and at this writing this trainload of coke has not been moved.

The ultimate results of the railroad strike are not probably appreciated by the public. The loss in production of iron and steel of all kinds, which can never be made up, is only one of the results of the strike, but probably the most costly. Another is that it has thrown the steel mills and finishing plants at least two months further behind in shipping material and this will be especially felt in the canning trade. The pack of fruit and vegetables this summer is likely to be very much lighter than last year, as it will be simply impossible for the tin plate mills to get out enough tin plate to meet the demands of the can makers for a full pack. Even if the railroad strike were settled definitely this week it would probably be July 1 or later before the freight movement would be normal.

In spots the railroad situation may be a little better, but its effects at present are worse than at any time since it started, for the reason that more plants are closed, as they have loaded all the cars they were furnished by the railroads and have no further storage room. It is believed that many of the railroad men on strike have already found other jobs at higher pay. A case is noted at Canton, Ohio, where many of the striking switchmen have been taken on by a large industrial interest and are said to be earning from $8 to $10 per day, much larger earnings than they were receiving from the railroads. The effects of the railroad strike are far more drastic and costly in a way than the steel strike of last fall. No estimate can be given of the loss in money and production of steel, but the figures are very large.

The Carnegie Steel Co. has been able to start two or three of its furnaces, but may have to close others before this week ends. The Weirton Steel Co., Weirton, Ohio, is still operating its blast furnaces and finishing mills, but probably will close everything at the end of this week, unless the railroad situation greatly improves.

The Wheeling Steel & Iron Co. has been able to start its blast furnace at Martins Ferry, Ohio, but is

greatly crippled in the operation of its Wheeling plants. The Pittsburgh Steel Co. still has one Monessen furnace idle, and the Shenango Furnace Co. has one furnace going and two down at Sharpsville. The E. W. Mudge Co. has been able to keep Ella going, but Claire has been down for three weeks. In the Youngstown district nearly everything is down tight, and from all reports the situation there is worse than in the Pittsburgh district.

Under the present conditions, practically no efforts are being made to do business. Blast furnaces cannot make shipments of pig iron, steel mills are loaded up for months and do not care to take on more commitments until the railroad situation is cleared up. Prices naturally are very strong and some materials are higher. Standard grade blast furnace coke sold on Tuesday at $12 per net ton at oven.

Pig Iron.—W. P. Snyder & Co. report the average price of basic iron in April to have been $42.815 compared with $41.50 in March, while the average price on Bessemer iron in April is $42.317 as compared with $42 in March, all f.o.b. cars, Valley furnace. These are average prices based on sales of 1000 tons or more to consumers. Very little is being done in pig iron, an occasional carload or two being sold to help out consumers in an emergency, and usually by working every string possible a furnace is able to get a car or two of iron through to destination, but with great delay. Recently a local open-hearth steel interest put out an inquiry for 10,000 to 18,000 tons of basic pig iron, mostly for third quarter, but is understood to have arranged to have this iron made by a blast furnace in which the concern is a large owner. Small lots of No. 2 foundry iron have been sold at as high as $45, Valley furnace. The belief is that prices on pig iron, when the railroad strike is ended, will advance sharply. A very large production in pig iron has been lost and furnaces were sold up for some months before the strike started.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh districts being $1.40 per gross ton:

Basic	$43.00
Bessemer	42.50
Gray forge	$41.00 to 42.00
No. 2 foundry	43.00
No. 3 foundry	42.50
Malleable, Valley	43.50

Billets and Sheet Bars.—Practically nothing is being done in the way of new business, and shipments are badly held up by the strike. A movement of freight east on the Pennsylvania Railroad is fairly good, and this has resulted in some sheet bars being sold for export trade. One sale of 1000 tons of open-hearth bars for export has been made at $85, Pittsburgh. As a rule, steel mills are not quoting on new inquiries, as they are oversold and cannot make shipment, and hardly know where they are.

We now quote 4 x 4-in. soft Bessemer and open-hearth billets at $38 to $60; 2 x 2-in. billets, $42; Bessemer sheet bars, $42 to $70; open-hearth sheet bars, $42 to $80, and forging billets, ordinary carbons, $80 to $85 base, all f.o.b. Youngstown or Pittsburgh mill.

Ferroalloys.—There is a fair amount of inquiry for ferroalloys and prices are very firm, with the exception of 50 per cent ferrosilicon, on which material there seems to be an overproduction, and prices have declined to some extent. Domestic 80 per cent ferromanganese is very firm at $200 for last half delivery and $250 per gross ton for prompt shipment.

We quote 76 to 80 per cent domestic ferromanganese $200 for last half delivery and $250 for prompt delivery, with a reduction of $1.50 to $1.75 per unit for lower percentages. We quote 50 per cent ferrosilicon at $80 to $85 and 18 to 22 per cent spiegeleisen at $62 to $67, delivered. Prices on Bessemer ferrosilicon are: 9 per cent, $56.50; 10 per cent, $59.50; 11 per cent, $62.50; 12 per cent, $66.10. We quote 6 per cent silvery iron, $45.75 to $46.25; 7 per cent, $50 to $50.50; 8 per cent, $52 to $52.50; 9 per cent, $54 to $54.50, and 10 per cent $56.50 to $57. An advance of $3.30 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on Bessemer ferrosilicon, and an advance of $2.50 per gross ton is charged for each 1 per cent silicon for 11 per cent and over on silvery iron. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, which has a uniform freight rate of $2.90 per gross ton for delivery in the Pittsburgh district.

Plates.—The railroad strike has cut down output of plates close to 50 per cent, some mills being entirely closed and others running only in part. Inquiries for cars are still coming out in a limited way, but are very slow in being placed.

We quote sheared plates of tank quality, ¼ in. and heavier, at 2.65c. to 3c. for very indefinite delivery, while prices on ¼-in. and heavier plates, named by mills that will agree to ship out in three to four months, range from 3.50c. to 4c. at mill.

Tin Plate.—Last week the American Sheet & Tin Plate Co. was able to start up nearly all of its 30 hot tin mills at its Farrell, Pa., works, and is now operating to about 22 per cent of hot tin mill capacity. In the past week some large contracts for tin plate have been made with can makers at the regular price of $7 per base box, and there have also been considerable sales of tin plate to consumers not competitors of the can makers, at $8 to $8.50 per base box. Present price conditions in the tin plate trade are without precedent. There have been times in former years when some independent mills were selling tin plate at lower prices than those of the leading interest, but now conditions are reversed and a good deal of tin plate has been sold at $1 to $1.50 per base box higher than the established price for last half.

We now quote tin plate to domestic consumers for remainder of the year delivery at $7 base box, stock items $8.50 to $9, and for export $11 to $12 per base box, all f.o.b. Pittsburgh.

Structural Material.—Inquiry is rather light, the railroad strike, the high cost of materials and labor, all adversely affecting the situation. The McClintic-Marshall Co. has taken 900 tons for a steel mill building for the Steel & Tube Co. of America, Indiana Harbor; 500 tons for a body building for the Haynes Automobile Co., Kokomo, Ind. The Fort Pitt Bridge Works has 700 tons for a bridge at Kenosha, Wis., and the Jones & Laughlin Steel Co., 250 tons for a hospital at Johnstown, Pa. The Carnegie Steel Co. price on plain material up to 15 in. is 2.45c. The other local interest is quoting 3.10c. to 3.25c., while still another producer is holding at 4c., Pittsburgh.

Coke.—Owing to the railroad strike, which has caused many coke plants in the Connellsville and other regions to close, the present output of coke is less than 50 per cent of what it was before the strike started. For the week ending April 24 output of coke in the upper and lower Connellsville regions was only 153,815 tons, while for the week ending May 1 it is estimated to have been less than 125,000 tons. In some cases solid trainloads of coke are going through to blast furnaces, but these are rare. One local blast furnace interest reports it has had a trainload of coke held up in the Conway, Pa., yards for over a week and with little chance of its going forward soon. The Frick Coke Co. is able to get coke to nearly all blast furnaces of the Carnegie Steel Co. in the Pittsburgh district, using its own motive power and switching to the different furnace plants by the Union Railroad. In spite of the greatly reduced output of coke, prices seem to be a little softer, likely due to the banking of so many blast furnaces, which has greatly restricted consumption. We continue to quote standard grades of blast furnace coke at $11 to $12 and 72-hr. foundry coke at $12 to $13 in tons of 2000 lb. at oven.

Wire Rods.—Local makers say they are not trying to do any new business, but report that inquiry is very active and they could readily sell large quantities of rods if they could spare them. Production has been greatly cut down by the railroad strike. We quote soft Bessemer and open-hearth rods at $70 to $75, and high carbon rods at $85 to $100 per gross ton at mill.

We quote wire nails at $3.25 base, this being the price of the American Steel & Wire Co., and $4 base on the new card recently issued by four or five of the independent mills. We quote bright basic wire at $3, this being the price of the American Steel & Wire Co., and $3.50, this being the price of most of the independent mills.

Steel Rails.—Very little is being done either in light rails or standard sections, owing to the railroad strike. The Carnegie Steel Co. is adhering strictly to the March 21, 1919, prices: 2.45c. for 25-lb. to 45-lb. sections; 2.49½c. for 16 and 20-lb. sections; 2.54c. for 12 and 14-lb. sections and 2.58½c. for 8 and 10-lb. sections. On standard sections the company is quoting $45 for Bessemer and $47 for open-hearth stock. Prices of out-

side rail mills are much higher, one leading mill quoting 25 to 45-lb. sections at 3.50c.; 16 and 20-lb. sections, 4.50c., and 12 and 14-lb. sections, 9c., at mill.

Sheets.—In spots some of the independent sheet mills are running a little better, but the American Sheet & Tin Plate Co. is operating to only 20 per cent or less. The railroads have stopped furnishing box cars and this means that likely more sheet mills will go down before this week ends. The loss in production of sheets has been very great, and means that the leading makers, when they resume after the railroad strike is settled, will have very little material to sell over the remainder of this year. The entire output of the American Sheet & Tin Plate Co. is under contract for last half.

We quote No. 28 gage box annealed one-pass black sheets at 4.35c. to 6.50c.; No. 28 galvanized, 5.70c. to $8.50c., and Nos. 9 and 10 blue annealed at 3.55c. to 6c., the lower prices named being the March 21 schedules, which are still named by the leading interest, while the higher prices represent a fair range of quotations by the independent mills.

Iron and Steel Pipe.—Effective from May 1, A. M. Byers Co., Inc., issued a new card on iron pipe in which discounts on butt-weld sizes were lowered 10 points, and on lap-weld sizes eight points, equal to an advance of $20 a ton on butt-weld iron pipe and $16 a ton on lap-weld. The company also made a straight advance of $10 a ton on all sizes of oil well tubular goods. This concern and the Reading Iron Co., Reading, Pa., are the only two interests that are making iron pipe to any extent, the Youngstown Sheet & Tube Co. and Spang, Chalfant & Co. not having made any iron pipe to speak of for some months. The Reading Iron Co. is a much larger producer of iron pipe than A. M. Byers Co., and has not made any change in its discounts, still quoting those put in effect on Jan. 7 last. The increasing costs of manufacture are the main reasons advanced by the A. M. Byers Co. for the higher prices on iron pipe it is now quoting. Conditions in the pipe trade show no important change. The National Tube Co. is still operating all its plants, but is piling most of its product. Spang-Chalfant & Co. are running very light, and the pipe mills of LaBelle Iron Works, Steubenville, Ohio, and the Wheeling Steel & Iron Co., Wheeling, W. Va., are practically idle on account of the railroad strike. The pipe mills of Youngstown Sheet & Tube Co. and Republic Iron & Steel Co., both at Youngstown, are also down because of the strike. There is still a very heavy demand for both iron and steel pipe, but the demand for oil well tubular supplies is not so active at present as it was two or three months ago. It is said promised development in some fields was not legitimate, but for stock selling purposes, and the banks are scrutinizing very closely any oil stocks offered them as collateral for loans.

Boiler Tubes.—It is intimated that prices on charcoal iron tubes may be advanced in the near future owing to increasing costs of manufacture, but nothing official on this has been given out. Makers report a continued heavy demand for stationary tubes and also for seamless tubes, and are sold up on both for some months ahead. Discounts on iron and steel tubes are printed on page 1343.

Wire Products.—Local makers say they are still refusing to take on new orders, except in a very limited way to regular customers, as their output is sold up for some months, and has been greatly curtailed by the railroad strike. The American Steel & Wire Co. price on wire nails remains at 3.25c. base, and plain wire at $3 base. Independent mills continue to quote wire nails at $4 and plain basic wire at $3.50, extras as given on the new card issued several months ago. One leading maker continues to quote wire nails at $4.50 base, and plain wire at $4 base. Prices on wire products are given in detail on page 1343.

Iron and Steel Bars.—Mills are getting still farther behind in deliveries, owing to the railroad strike, which has cut down output and practically stopped shipments. Most mills are sold up on steel bars over the remainder of this year, while mills rolling iron bars are sold up for three or four months. One large mill in this district, rolling iron bars, is closed down on account of the railroad strike.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. to 4c. at mill, prices depending entirely on the buyer and the delivery wanted. The demand for concrete reinforcing steel bars is fairly active, and we quote these, when rolled from billets, at 4c. to 4.25c., and from old steel rails at about 3.50c. at mill. We quote common iron bars at 4.25c. to 4.50c. and refined iron bars at 4.50c. to 5c. in carloads, f.o.b. mill, Pittsburgh.

Cold-Rolled Steel Bars.—The output has been greatly curtailed by the railroad strike, only one plant in this district being able to operate in full. Three local makers say they are sold up from four to six months, and are now quoting only to regular customers for such delivery as they can make. Practically no shipments are going out, but hundreds of tons of material are loaded on cars ready for shipment to customers when the strike ends. We continue to quote cold-rolled steel bars at $4.10 to $4.25 per 100 lb., to regular customers only, and for indefinite delivery, f.o.b. mill. Premium prices range from 5c. to 8c. per lb. or higher.

Hot-Rolled Strip Steel.—Fairly good deliveries are being made by truck to consumers in this district, and in some cases to customers located 300 to 400 miles away. Minimum prices range from 5½c. to 7c. per lb. at mill, to regular customers only. It is said that premium prices to as high as 10c. per lb. have been paid.

Cold-Rolled Strip Steel.—Minimum prices to regular customers remain at 8½c. to 9c. per lb., but sales have been made at premium prices of 12c. per lb. or higher.

We quote standard spikes, ½ to 9/16 in. and larger, $4 base per 100 lb. in carload lots of 200 kegs of 200 lb. each, and small spikes, ⅜ in. and 7/16 in., $4.50; 5/16 in., $5; boat and barge spikes, $4.25 f.o.b. Pittsburgh. Tie plates, $3 to $4 per 100 lb.

Old Material.—The local scrap market is about as dull, as far as sales and shipments to consumers are concerned, as it is possible for it to get. Embargoes are on to practically all scrap-consuming points, due to the railroad strike, and these are likely to remain in force until the strike is over. Dealers are not trying to do business under present conditions, but are giving all their efforts to getting scrap already loaded on cars moved to destination, but with little or no success. The Carnegie Steel Co. is able to get some scrap into its plants at Homestead, Duquesne and Clairton by using its own Union Railroad, but other large consumers are getting no deliveries. An occasional carload is being sold by dealers to dealers, but practically no sales are being made to consumers. Some dealers believe that the railroad strike may possibly firm up prices on steel-making scrap, as a good many plants that make their own scrap are down. In addition, prices on pig iron seem likely to be higher and may have the effect of carrying scrap prices up. The market is purely nominal, as no sales are being made on which to base prices.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	$25.00 to $25.50
No. 1 cast for steel plants	34.00 to 35.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh	32.00 to 33.00
Compressed steel	22.00 to 22.50
Bundled, sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	16.00 to 16.50
Bundled sheet stamping	15.00 to 15.50
No. 1 busheling	17.50 to 18.00
Railroad grate bars	26.00 to 26.50
Low phos. melting stock (bloom and billet ends, heavy plates) ¼ in. and heavier	30.00 to 30.50
Railroad malleable	30.00 to 30.50
Iron car axles	37.00 to 38.00
Locomotive axles, steel	34.00 to 35.00
Steel car axles	31.00 to 32.00
Cast iron wheels	40.00 to 41.00
Rolled steel wheels	29.00 to 30.00
Machine-shop turnings	15.50 to 16.00
Sheet bar crop ends (at origin)	28.00 to 28.50
Heavy steel axle turnings	20.00 to 21.00
Heavy breakable cast	32.00 to 32.50
Cast iron borings	17.50 to 18.00
No. 1 railroad wrought	31.00 to 32.00

Chicago

CHICAGO, May 4.

In the Chicago switching district, the railroad situation is gradually improving, and west of this city the strike has lost most of its force. East of the Illinois-Indiana State line, however, transportation conditions have taken no turn for the better, with the consequence that western industries dependent on that territory for coal and coke are in a difficult position. A large Wisconsin automobile plant, in fact, has been forced to suspend operation. Other large manufacturers have prevented a shut down by purchasing whole trainloads of fuel. Despite the difficulty in securing coal and coke, local iron and steel production is increasing. Within the past week, the leading steel interest has refired three additional blast furnaces, namely two at Gary and one at South Chicago. It now has 19 out of 29 stacks in blast at its various plants and is producing finished material at the rate of about 80 per cent of normal. The foremost independent has resumed work in its No. 2 plant at Indiana Harbor and is operating at about 50 per cent of capacity there, while the average rate for the entire works is 70 per cent. All of the mills and blast furnaces of the Steel & Tube Co. of America are going, but its by-product plant, owing to unsatisfactory coal shipment, is producing not more than one-half its normal output. The Wisconsin Steel Works have been severely handicapped through inability to get deliveries of coal and coke and, while it has two out of three blast furnaces active, all its mills but one are down. The Interstate Iron & Steel Co. is again operating its three plants at a good rate and the Republic Iron & Steel Co., which has suffered no interruption here or in Moline since the inception of the strike, is still producing at a normal rate. The four plants of the American Steel & Wire Co. in this territory are operating at 80 per cent of capacity.

The inflow of fuel is still so uncertain that the present rate of production in this district may not be maintained. At the same time, a shortage of cars makes shipments in this territory difficult, despite the fact that the railroads are fast filling their switching crews.

The widely heralded May-day demonstrations failed to materialize in this territory. In Gary, Indiana Harbor, East Chicago, Hammond and Whiting, however, much Bolshevist literature was surreptitiously distributed. It is becoming evident that the radical element is small in numbers and in influence. At a recent meeting called by agitators at Indiana Harbor, only 40 steel workers were present.

The demands of the molders in this district for $1.25 an hour with an 8-hr. day and time and one-half for overtime were countered by an offer by employers of $1.05, which was accepted by the union organization. About one-third of the members, however, have refused to abide by the agreement and have already forced one large local foundry to suspend operation. At Rockford, Ill., also, the molders have struck.

The market is still overshadowed by the railroad situation and buyers are confining their purchases to materials which they are sure they will use. Few are purchasing ahead to protect themselves against possible advances. While present conditions are abnormal, signs point to a gradual closing up of the gap between the prices of the Steel Corporation and the independent mills. At any rate, lower prices than prevailed during the winter are now being named by some independents and in exceptional cases the Corporation prices have been met.

Pig Iron.—While there is a fair amount of spot business, the market is quiet. Probably the largest transaction of the week was the sale of 750 tons of last half foundry at $42, base, Birmingham. A lot of 500 tons of malleable for prompt shipment was also closed. Spot business is limited by the coke situation. The by-product plants in this district have been unable to increase production and little eastern coke can be moved except in trainlots. It is said that many Chicago foundries would have been forced to close, had they not sent their own motor trucks to the local by-product plant to secure their allotments. Several large melters have had solid trainloads of coal delivered from the East and others are making arrangements for similar shipments. Two important producers of Southern foundry continue to quote $42 base, Birmingham, for delivery during the remainder of the year, but some prompt material is moving at $43. Several smaller makers are quoting $44, Birmingham, and Virginia furnaces are asking $44, furnace. The Illinois Steel Co. has apportioned the last half output of its Milwaukee merchant furnace among customers. Recent sales indicate that copper free low phosphorous is commanding $54, furnace.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton.

Lake Superior charcoal, average sil. 1.50 (other grades subject to usual differentials), deliv. at Chicago...	$57.50
Northern coke, No. 1 sil. 2.25 to 2.75.	45.25
Northern coke foundry, No. 2, sil. 1.75 to 2.25.....	43.00
Northern high phos. foundry.....	43.00
Southern coke, No. 1 foundry and No. 1 soft, sil. 2.75 to 3.25.....	50.20
Southern coke, No. 2 foundry, sil. 2.25 to 2.75.....	48.70
Southern foundry, sil. 1.75 to 2.25..	47.00
Malleable, not over 2.25 sil.....	43.50
Basic	42.00
Low phos. (copper free).....	54.00
Silvery, 7 per cent.....$56.40 to	59.30

Ferroalloys.—The leading merchant iron interest has contracted for ore and will utilize the furnace formerly leased to the Miami Metals Co. for the production of ferromanganese. It has already made two sales of 1000 tons each at $185 for last half delivery. In general, the market ranges from $225, delivered, for spot material, to $200, delivered, for second half shipment.

We quote 75 to 80 per cent ferromanganese, last half, delivered, $200; spot, delivered, $225; 30 per cent ferrosilicon at $85 delivered; spiegeleisen, 18 to 22 per cent, $75 furnace.

Railroad Rolling Stock.—The Burlington has ordered 500 stock cars from the Western Steel Car & Foundry Co. These will require 3200 tons of steel, of which the plates and shapes and the axles will be furnished by the leading interest. The Louisville & Nashville has purchased 13 passenger cars from the American Car & Foundry Co. The Northern Pacific has ordered 71 locomotives from the American Locomotive Co. The Baltimore & Ohio has let 1000 box car bodies to the Mt. Vernon Car Mfg. Co. The Rock Island has purchased 35 passenger service cars from the Pullman Co. The Atlantic Coast Line is in the market for 500 box cars.

Plates.—The leading interest will furnish 27,000 tons of plates and shapes to a Pacific Coast shipyard for the construction of seven tankers. A Lake yard is in the market for 10,000 tons required in building 10 vessels. Despite the activity in shipbuilding just noted, the day of extensive vessel construction is believed to be over, as the world has recovered to a large extent from the tonnage losses incurred during the war. The Southwestern oil fields have also lost their importance as consumers of steel, because the construction of storage tanks there has ceased. This is accounted for by the fact that the demand for oil is so great that additional storage facilities are not needed. The railroads continue to account for the placing of moderate tonnages of steel with the mills. The Baltimore & Ohio has ordered 1000 box car bodies from the Mt. Vernon Car Mfg. Co. Six thousand tons of plates and shapes for this equipment will be furnished by the leading interest. The same producer will supply 600 tons of plates and shapes and 60 tons of axles for 35 coaches which will be built by the Pullman Co. for the Rock Island. The Atlantic Coast Line is inquiring for 500 box cars involving 2600 tons of plates and shapes and 400 tons of bars. Generally speaking, the demand for plates has fallen off and signs point to a gradual contraction of the gap between the prices of the Steel Corporation and the independents. While an Eastern independent still reports sales at 4c., Pittsburgh, others have taken business for last half delivery at 3c.

The mill quotation is 2.65c. to 4c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.17c. for plates out of stock.

Structural Material.—On May 1 the wages of some 20 crafts in the Chicago building industry advanced

from $1 an hour to $1.25, making the pay for an 8-hr. day $10, to which double time for overtime will be added. At the same time, common building labor was raised from 75c. an hour to $1. The high cost of labor, together with the tight money situation and high material prices, has already had a dampening effect on construction activity. Chicago, early this year, was expected to do about $150,000,000 worth of building in 1920. It is now doubtful whether one-half that amount of work will be done. Numerous large projects have been postponed or abandoned outright. Within the past week or two, difficulties in financing forced the abandonment of two good sized local construction jobs which had been practically closed. One of these involved 6000 tons. A general slackening in building activity throughout this territory is evident, and this has been accompanied by a contraction in the demand for structural shapes. Independent mills, in some cases, are still making sales for early delivery at 4c., Pittsburgh, but the tendency is toward a decline towards the Steel Corporation level. Quotations of 3¼c., 3c. and 2¾c. for plain material are becoming commoner. Notwithstanding the general trend just noted, one of the largest tonnages of the year has just been closed in this territory, namely, 15,000 tons, which will be fabricated by the American Bridge Co. for the Cincinnati Southern bridge at Cincinnati. The Steel & Tube Co. of America has awarded 1000 tons to the McClintic Marshall Co. for a seamless tube plant at Indiana Harbor. A highway bridge over the Missouri river at Bismarck, N. D., a job involving 2425 tons, is now being figured on. Additional lettings include:

Roosevelt Theater, Ascher Bros., Chicago, 600 tons, to Morava Construction Co.

Haynes Automobile Co., body works, Kokomo, Ind., 450 tons, to unnamed independent.

Swift & Co., engine room addition, Union Stock Yards, St. Louis, 300 tons, to Gage Structural Steel Co.

Pending projects include:

Cotton Exchange, New Orleans, 655 tons, bids in.

River produce sheds, New Orleans, 600 tons, bids in.

Haskell & Barker Car Co., foundry, Michigan City, Ind., 300 tons, bids in.

McCormick Theater, Chicago, 250 tons, bids in.

The mill quotation is 2.45c. to 4c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.97c. for materials out of warehouse.

Bars.—While this commodity continues strong, Eastern independents are showing an increasing disposition to approach the Steel Corporation level in quoting on attractive tonnages of mild steel bars. In general, 3c. is the minimum quotation, but in exceptional instances 2¾c. and even 2.35c. have been named. At the same time, some lots for early shipment continue to be closed at 4c., Pittsburgh. The local mills are having difficulty in taking care of their customers. The leading interest is heavily booked ahead and the foremost independent is carefully apportioning its third quarter output, so that all customers will be assured their fair share of what is available. Bar iron and rail carbon steel bar mills are heavily committed and are taking new business in a limited way from their regular trade only.

Mill prices are: Mild steel bars, 2.35c. to 4c., Pittsburgh, taking a freight of 27c. per 100 lb.; common bar iron, 3.75c., Chicago; rail carbon, 3.75c., mill. Jobbers quote 3.87c. for steel bars out of warehouse.

Sheets.—The demand continues strong, but deliveries have been interfered with by the railroad strike. The transportation situation in Chicago is improved and west of here is steadily approaching normal.

Mill quotations are 4.35c. to 6.50c. for No. 28 black; 5.55c. to 6c. for No. 10 blue annealed, and 5.75c. to 8.50c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight of 27c. per 100 lb. to Chicago. The lowest prices are those of March 21.

Jobbers quote, Chicago delivery out of stock No. 10 blue annealed, 7.02c.; No. 28 black, 8c.; No. 28 galvanized, 9.50c.

Wire Products.—Although the switchmen's strike is on the wane in the West, car shortage continues to exert a deterrent influence on shipments. Yesterday at the plants of the leading interest at Waukegan, Joliet, De Kalb, Ill., and Anderson, Ind., a total of but 12 cars was received for loading, and of these only two were box cars. Operation has been reduced to about 80 per cent of normal, but every effort is being made to prevent a further curtailment of output. Not only are trucks being utilized for the movement of raw materials to the plants, but customers are being encouraged to move their shipments by truck. The amount of money tied up in goods in transit has assumed large proportions. A single jobber has delayed shipments en route totaling $150,000 in value. Whereas the transportation situation has tended to curtail inquiry in other commodities, this is not true in wire products, as buyers realize that the demand exceeds the supply and that their orders will receive attention in the order in which they are received. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 1343.

Rails and Track Supplies.—There continues to be a good demand for light rails and track fastenings and limited tonnages are being taken on by the leading interest. There is also a fair inquiry for standard section rails, consisting in part of requests by railroads for additional tonnages. One line wants 15,000 tons, and others have asked for 4000 and 1500 and 1000 tons respectively. The mill of the leading interest is unable to add to its present commitments.

Standard Bessemer rails, $45 to $55; open hearth rails, $47 to $57. Light rails, 2.45c. to 3.50c. f.o.b. makers' mills.

Standard railroad spikes, 3.55c. to 4c. Pittsburgh. Track bolts with square nuts, 4.90c. to 5c., Pittsburgh. Steel tie plates and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. f.o.b. makers' mills.

Cast-Iron Pipe.—Viroqua, Wis., has awarded 50 tons to the American Cast Iron Pipe Co., and James B. Clow & Sons are low bidder on 2000 tons for South Bend, Ind. The market is slow.

We quote per net ton f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., $79.80; 6-in. and above, $76.80; class A and gas pipe, $2 extra.

Bolts and Nuts.—Shortage of raw material continues to limit the output of manufacturers. Although the railroad strike seems to be losing its force, car shortage and inability to secure smaller stock from the steel mills are hampering production. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 1343.

Jobbers quote structural rivets, 5.37c.; boiler rivets, 5.47c.; machine bolts up to ¾ x 4 in., 30 per cent off; larger sizes, 20 off; carriage bolts up to ¾ x 6 in., 20 off; larger sizes, 15 off; hot pressed nuts, square tapped and hexagon tapped, 50c. off; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras are unchanged.

Old Material.—The market is still slow, but is not without activity. Within the past few days, concurrent with an improvement in the transportation situation, some trading has been done, although largely confined to dealers. The transactions of one seller involved 15,000 tons. It is, as yet, difficult to gage the market. Probably another week will have to pass before prices will assume a steady position. For the moment, some items seem weaker, and foundry grades are stronger, this being accounted for by the fact that melters are running short of iron. Consumers have not yet shown any interest in melting steel. The Chicago & Northwestern offers 3500 tons, the Pennsylvania Northwest Region, 1000 tons, the Pennsylvania Central Region, 1500 tons and the Grand Trunk, Canadian lines, 1500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton	
Iron rails	$33.00 to	$34.00
Relaying rails	45.00 to	55.00
Car wheels	37.00 to	38.00
Steel rails, rerolling	31.50 to	32.00
Steel rails, less than 3 ft	28.50 to	29.00
Heavy melting steel	23.00 to	23.50
Frogs, switches and guards, cut apart	23.00 to	23.50
Shoveling steel	22.50 to	23.00
Low phos. heavy melting steel	28.00 to	28.50
Drop forge flashings	18.50 to	19.50
	Per Net Ton	
Iron angles and splice bars	$30.50 to	$31.50
Steel angle bars	23.50 to	24.00
Iron arch bars and transoms	31.50 to	32.50
Iron car axles	39.00 to	40.00
Steel car axles	32.50 to	33.50
No. 1 busheling	20.00 to	21.00
No. 2 busheling	14.50 to	15.00
Cut forge	24.00 to	24.50
Pipes and flues	16.50 to	17.00
No. 1 railroad wrought	26.50 to	27.00
No. 2 railroad wrought	24.00 to	24.50
Steel knuckles and couplers	23.00 to	23.50
Coil springs	25.00 to	25.50
No. 1 cast	37.50 to	38.00
Boiler punchings	24.00 to	24.50
Locomotive tires, smooth	23.00 to	23.50
Machine shop turnings	12.00 to	12.50
Cast borings	14.00 to	14.50
Stove plate	30.00 to	30.50
Grate bars	29.50 to	30.00
Brake shoes	25.50 to	26.00
Railroad malleable	26.50 to	27.00
Agricultural malleable	26.50 to	27.00
Country mixed	17.50 to	18.50

Buffalo

BUFFALO, May 3.

Pig Iron.—There were comparatively light sales of iron in this district during the past week. The iron sold was foundry, principally, at a base price of $45, furnace interests say. One furnace sold about 1000 tons in the aggregate and reports inquiry for approximately 15,000 tons of foundry and malleable iron. No malleable, so far as can be learned, was sold. One furnace interest which has been more or less actively in the market reports sales of 1500 tons of foundry during the week, an export inquiry of 10,000 tons in the aggregate and a domestic inquiry in the aggregate of 3000 to 5000 tons of foundry. Though there have been reports from time to time of Buffalo iron sold at less than $45 furnace, no record can be found of that. Dealers, one and all, say that their price is $45 for No. 2 foundry, and they assert that the market is exceptionally strong at that figure. One furnace states that it desires no $45 business because the outlook for higher costs is affording them uneasiness. Iron furnaces have not yet been affected to any considerable extent by the second strike, except the Rogers-Brown Iron Co., which had been expecting to blow in its fourth furnace Friday, but in view of the labor upheaval will not light at this time. This furnace interest has sufficient fuel to last for at least three weeks for its other furnaces. Other furnace interests are in a similar good position.

We quote f.o.b. Buffalo:	
No. 1 foundry, 2.75 to 3.25 sil.	$48.00
No. 2 X foundry, 2.25 to 2.75 sil.	46.25
No. 2 plain, 1.75 to 2.25 sil.	45.00
Basic	$44.00 to 45.00
Malleable	46.25
Lake Superior charcoal	58.00 to 60.00

Finished Iron and Steel.—Mill operation here is uncertain because of the second unauthorized strike of yardmen to occur within two weeks. One thousand men left their work Friday, and while crews of yard engines in mill yards remained at their tasks, general yard switching was hampered. Mills are not yet suffering from the failure to move cars, as they have sufficient supplies of fuel to last them for a short period, but the uncertainty of the situation has led to extreme caution on the part of the mills in their viewpoint toward new business. Piling of product is going on, though occasionally a mill is able to get a few cars through to the main line, where these are picked up by through trains. Sales agencies of mills in other districts report that it has been possible in some instances to complete a trainload of freight which is assembled on the properties and picked up by main line trains. Inquiry and sales which had not yet attained normal conditions following the last strike are now faced with the same chaotic conditions as before. There has been a dwindling of inquiry and an unwillingness on the part of the mills to quote on extra tonnage. Operation was down to 50 to 60 per cent just following the strike, and it is believed that it is not better than 70 per cent now. Prices are very firm, and there is a feeling that the tendency will be upward if the present conditions continue. There is an intense demand for wire products, but mills are tightly sold up and will refuse to quote for the next four months. Demand for billets is heavy, but billet mills are heavily sold up, some as much as five months in advance. Mills find an enormous demand on the part of automobile plants for springs.

Jobbers quote the following prices for this territory: Steel bars, 4.61c.; iron bars, 5.26c.; structurals, 4.46c.; plates, 4.66c.; No. 10 blue annealed sheets, 6.51c.; No. 28 black sheets, 8.25c.; No. 28 galvanized sheets, 9.50c.; bands, 5.81c.; hoops, 6.06c.; cold rolled steel, 6.00c.

Old Material.—The scrap situation remains in statu quo. There is little or no material moving on the rail lines, which, before they had been adjusted following the first trainmen's strike, were precipitated into the second one. Dealers and consumers have determined to do no business until the traffic situation clears up and this attitude has slowed up what little business was moving. Embargoes have again been declared on most points, and even after the settlement of this second labor dispute, it is doubtful whether scrap will resume a normal aspect until a week or so after the situation clears. The only phase that may operate to prevent this is the fact that consumers are known to be experiencing depletion of stock piles. There is no doubt, dealers say, that a buying movement is on its way. They say that there is plenty of good business in sight, when the transportation conditions improve to the point where it can be handled.

We quote dealers' asking prices, per gross ton f.o.b. Buffalo, as follows:

Heavy melting steel, regular grades	$25.00 to $26.00
Low phos., 0.04 and under	32.00 to 33.00
No. 1 railroad wrought	31.00 to 32.00
No. 1 machinery cast	38.00 to 39.00
Iron axles	40.00
Steel axles	41.00 to 42.00
Car wheels	37.00 to 38.00
Railroad malleable	31.00 to 32.00
Machine-shop turnings	16.50 to 17.00
Heavy axle turnings	20.00 to 21.00
Clean cast borings	17.00 to 18.00
Iron rail	30.00 to 31.00
Locomotive grate bars	24.00 to 25.00
Stove plate	32.00 to 33.00
Wrought pipe	21.00 to 22.00
No. 1 busheling	20.00 to 21.00
Bundled sheet stamping	17.00 to 18.00

Birmingham

BIRMINGHAM, ALA., May 3.

Pig Iron.—May entered with the Birmingham iron market firmly entrenched on the $42 base for last half delivery and from that to $44 for spot metal. The leading interest has not changed its base from $38, but that position is without present influence owing to the sold-up status of its active producing capacity. Scarcity of raw material rather militates against an increase in that direction. Three small producers are on a flat $44 base and a large interest charges $43 to $44 for spot. For instance, this interest sold a small tonnage of spot iron of 4.25 to 4.75 silicon for $53.50. The same interest sold two 1000-ton lots of last half iron at $42 and took an export order of 1000 tons for spot shipment at $44. The two largest foundry interests have gradually increased their $42 bookings and it is safe to say that by the incoming of May total bookings of Birmingham iron at $42 had reached at least 100,000 tons. All hesitancy as to $42 minimum has gone. One company that sold 10,000 tons several weeks ago at $40 and withdrew entered during the week at $42 and quickly placed its entire offerings of around 5000 to 6000 tons. The $38 bookings probably cover as much as 80,000 to 100,000 tons, a surmise based on the production of one active foundry stack. Scarcity of coal and coke prevents the coming in of a number of idle furnaces. Whether this situation will be lifted later remains to be seen. For the present the only prospect of increased production is an additional stack of the Sloss-Sheffield company, which is to come in this month, giving that company five on the active list. Incoming pipe works, stove foundries and the like will add considerably to the Southern melt and leave that much less iron for the open market. The Gulf States Steel Co. is operating on nearly full turn in wire and rod mills and, by the time the idle stack is relined, will have used up the iron on hand.

We quote per gross ton, f.o.b. Birmingham district furnaces, the Tennessee company excepted, as follows:

Foundry, sil. 1.75 to 2.25	$42.00 to $43.00
Basic	41.00 to 42.00
Charcoal	55.00

Cast Iron Pipe.—Sanitary pipe production will be increased from now on by two incoming Anniston shops. Flange pipe orders are accepted with the understanding that delivery is not to ensue for six months. The United States Pipe works is shipping another 3000 tons of gas and water pipe to California points via rail to Mobile, thence by ship to the Emergency Fleet Corporation through the Panama canal. The voyage from Mobile to Los Angeles consumes two weeks. Return cargoes will consist of canned goods. Total pipe movements to the Pacific coast via this routing now amount to nearly 6000 tons. The two Carolinas continue to enter numerous orders for small sizes of water pipe.

Coal and Coke.—Increase in by-product coke output does not seem to have eased the situation. Incoming

pipe shops and the new Oborn stove works find it difficult to make coke contracts. Furnace interests are eager takers of the extra coke production. Coke makers are not making ironclad contracts for future delivery. Less and less coke leaves the district. The Tennessee company is warming up the remaining 77 of its new 154 by-product ovens at Fairfield. Foundry coke ranges from $11 to $12 and over for spot.

Old Material—The scrap market is very weak, especially in the steel lines. Consumers locally are out of the market and freight rates prevent business far afield.

We quote per gross ton, f.o.b. Birmingham district yards prices to consumers, as follows:

Steel rails	$21.00 to $21.50
No. 1 heavy steel	20.00 to 20.50
Cast-iron borings	11.00 to 11.50
Machine-shop turnings	11.00 to 11.50
Stove plate	24.00 to 24.50
No. 1 cast	31.00 to 32.00
Car wheels	30.00 to 31.00
Tramcar wheels	28.00 to 29.00
Steel axles	29.00 to 30.00
No. 1 wrought	21.00 to 21.50

Boston

BOSTON, May 4.

Pig Iron.—A local house has sold 5300 tons western Pennsylvania iron this week, mostly silicon 2.25 to 2.75, including one lot of 2000 tons, at $44.50 furnace. A little of this iron was silicon 1.75 to 2.25, which sold at $43.50 furnace. No part of it was resale iron. The activities of other houses have been confined almost exclusively to spot resale iron available in New England, owned by one foundry and sold to another at prices which in some instances represent practically $70 laid down at the foundry of the last buyer. A sale of 250 tons early shipment malleable at private terms to a Massachusetts consumer is reported, and one of 100 tons charcoal, early shipment, to a Canadian consumer at $55 furnace base. One eastern Pennsylvania furnace has raised its price from $45 to $46.50 on No. 2 X, and its base price to $45, while another smaller one has raised its price from $46 to $47 base. Otherwise prices, which owing to the lack of business are nominal, are unchanged. Ferromanganese, third quarter shipment, is offered here at $225 f.o.b. furnace, freight allowed. A local house reports the sale of 200 tons for last half delivery, the largest single order ever accepted by this house. Delivered pig iron prices follow:

East. Penn., sil. 2.25 to 2.75	$48.15 to $50.65
East. Penn., sil. 1.75 to 2.25	46.90 to 49.40
Buffalo, sil. 2.25 to 2.75	49.15 to 50.15
Buffalo, sil. 1.75 to 2.25	47.90 to 48.90
Virginia, sil. 2.25 to 2.75	48.95 to 50.95
Virginia, sil. 1.75 to 2.25	47.70 to 49.70
*Alabama, sil. 2.25 to 2.75	46.75 to 47.75
*Alabama, sil. 1.75 to 2.25	48.95 to 49.95

*Alongside Boston prices.

Coke.—The New England Coal & Coke Co. has advanced its sliding scale price on coke $2 a ton to $12 Connellsville base. Its contract price for the rest of 1920 is $2 higher on a $12 Connellsville base, and its spot price on a $12.50 Connellsville base. The freight rate from Connellsville is $4.40, which brings the spot delivered price up to $16.90, and the f.o.b. Everett oven price up to $14.50. The Providence Gas Co. is out of the market.

Finished Iron and Steel.—One independent mill recently shipped a solid train of 60 cars of mixed products to the New York terminus, whence 35 cars were distributed to Boston & Albany Railroad points, and the remaining 25 cars to Boston & Maine points. Aside from this shipment, New England receipts during the past fortnight have been few. The New Haven Railroad has no men at work at the Harlem River and Maybrook gateways, consequently the outlook for shipments via that road are not bright. No local mill representative has opened books for the third quarter, and most of them have their doubts on this point. One independent is quoting 3.50c. f.o.b. mill on bars, but others ask 4c. The general independent price on plates and shapes is 4c. mill. One mill's May sheet price list shows a conservative advance as compared with April prices. Stone & Webster, Boston, have let the structural for the 1920 extension of the Lakeside power station, Port Arthur Light & Power Co., Port Arthur, Tex., amounting to 250 tons, to the Phoenix Bridge Co., local office; also 800 tons to McClintic-Marshall Co., for American Sugar Co. boiler plant, Baltimore, Md. James H. Tower Co., Providence, R. I., is awarded 200 tons for a Pawtucket, R. I., cotton mill. Tonnages not awarded include 700 tons, General Electric Co., Lynn, Mass.; 300 tons, Lever Bros., Cambridge, Mass., soaps.

Warehouse Business.—Iron and steel prices continue strong and unchanged. Local supplies, generally speaking, are small, that of cold rolled under 1 in. being exhausted. Concrete bars, large sizes, are selling $5.50 from warehouse, while smaller sizes bring $5 to $10 a ton more. A large Western automobile manufacturer is inquiring for machine screws, bolts and nuts in local jobbing districts, but finds little material available. Tire bolts are higher, 1½-in., 1¾-in. and 2 in. x 3/16-in. at 45c. per 100 net, and other sizes at 35 per cent off list. Manufacturers of machine and common carriage bolts have advanced prices on large sizes to small sized base. Common cut nails are now $7.75 per keg base, and galvanized cut nails, $11.75 base. Canada is reported to have prohibited exports of nails to this country.

Jobbers quote: Soft steel bars, $5.50 base per 100 lb.; flats, $6.00 to $6.35; concrete bars, $5.50 to $6.00; tire steel, $6.50 to $7.00; spring steel, open hearth, $10; crucible, $15; steel bands, $7.25; steel hoops, $8.25; toe calk steel, $7.25; cold rolled steel, $7.00 to $7.50; structural, $5.50; plates, $6.00; No. 10 blue annealed sheets, $8.00; No. 28 black sheets, $8.55; No. 28 galvanized, $10; refined iron, $5.50 base; best refined, $7; Wayne, $8; band iron, $7.25; hoop iron, $8.25; Norway iron, $20.

Old Material.—The tendency of old material prices is downward, but the net changes, with the exception of No. 1 railroad wrought and stove plate, as compared with a week ago, are small. The Bethlehem Steel Co. is buying No. 1 heavy melting steel at $21.50 delivered, but other interests are still paying as high as $20.40 f.o.b. shipping point, so the extreme range of yard prices is a little wider than usual. A Portland consumer is buying shafting at $32 to $33 f.o.b. shipping point, while Connecticut consumers are paying $42 to $43 delivered for street railway wheels. There is a little buying of railroad malleable at former prices and foundries continue to take No. 1 machinery cast in limited quantities, but otherwise the old material market is quiet. The most unfavorable feature of the market is a request by consumers for deferred deliveries. Local yard prices, which are more or less irregular, follow:

No. 1 heavy melting steel	$18.00 to $20.50
No. 1 railroad wrought	26.00 to 27.00
No. 1 yard wrought	24.00 to 25.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	20.50 to 21.50
Machine shop turnings	15.00 to 15.50
Cast iron borings	15.50 to 16.00
Heavy axle turnings	16.00 to 16.50
Blast furnace borings and turnings	14.50 to 15.00
Forged scrap	15.00 to 15.50
Bundled skeleton	15.00 to 15.50
Street car axles	32.00 to 33.00
Car wheels	37.50 to 38.50
Machinery cast	39.00 to 40.00
No. 2 cast	36.00 to 37.00
Stove plate	28.00 to 29.00
Railroad malleable	26.50 to 27.50
Rerolling rails	28.00 to 29.00

New York

NEW YORK, May 4.

Pig Iron.—Sellers of pig iron are devoting themselves largely to helping foundries that are in trouble owing to the strike on the railroads and in the New York harbor. Not a ton of pig iron is going in or out of New York and only limited tonnages to cities in New Jersey, while throughout New England there is much distress among the foundries. This condition has caused a very active inquiry for moderate tonnages of iron for immediate delivery, and many sales of this kind have been made in the hope that the railroad situation will soon improve. We note a sale of 200 tons of Virginia iron at $45, furnace, for prompt delivery, which is $1 above the usual quotation. The inquiry for from 8000 to 10,000 tons of foundry iron from a pump manufacturer for second quarter and last half delivery, referred to in this report last week, has been reduced to 4000 tons, and it is believed that

this tonnage will be purchased within a few days. A Connecticut melter has placed an order for 1000 tons. It was reported to be in the market for 3000 tons. Foundry coke is selling as high as $13.50, Connellsville ovens.

We quote for delivery in New York as follows:

East. Pa., No. 1 fdy., sil. 2.75 to 3.25	$50.05 to $51.05
East Pa., No. 2 X fdy., sil. 2.25 to 2.75	49.05 to 50.05
East. Pa., No. 2 fdy., sil. 1.75 to 2.25	47.80 to 48.80
Buffalo, sil. 1.75 to 2.25	47.90 to 48.90
No. 2 X Virginia, sil. 2.25 to 2.75	48.60

Ferroalloys.—Conditions in the ferromanganese market are practically unchanged. There seems to be almost no demand for last half, but there is a fair inquiry for delivery before July 1. For last half delivery American producers are still quoting $200, delivered, while a limited amount of British alloy is available from August on at $195, seaboard. There have been sales of a few small lots of British alloy for delivery before July 1 at $225, seaboard, and of domestic alloy for the same delivery at $250, delivered. Imports of ferromanganese in March were 2860 tons, bringing the total for the nine months ended March 31 to 26,280 tons as compared with 17,905 tons for the same nine months ended March 31, 1919. The spiegeleisen market is strong but quiet at $75, furnace, at which sales aggregating about 700 tons have been made for domestic consumption. There is a fair inquiry for export, but the high prices ruling at present may interfere with purchases. High-grade manganese ore is quoted around 65c. to 80c. per unit, seaboard, depending on the delivery, but no sales have been heard of. Imports of manganese ore in March were 18,970 tons, but the present rate is only about one-third of what it was a year ago, based on the total for the nine months ended with March. Ferrosilicon, 50 per cent, is strong with most producers sold up to July 1 and quotations are therefore more or less nominal at $85 to $90 per ton, delivered.

Finished Iron and Steel.—The market continues strong. A large unsatisfied demand appears any time a mill indicates a willingness to consider the business. Chief activity has rested in securing shipments. Besides attempting to arrange for solid trains from the mills, roundabout shipments are sometimes effected or cars are collected at the point nearest to the ultimate destination that is not embargoed, through trains there being made up for movement to the buyers' yards. Full prices appear to obtain pretty generally and sales are noted of plates at 4c., Pittsburgh, and of bars at 4.25c. It remains that sharp buyers are on the outlook for a mill which may desire to fill up bookings of a particular product or size of product, for then a temporary cut may be made to secure an attractive line of business. It seems clear that in large fabricated steel projects some mills have been figuring at prices not much above 3c., Pittsburgh, for the plain material, 3.05c. to 3.15c. appearing not uncommon. Fabricated steel awards include the following: 300 tons for the Bryant Electric Co., Bridgeport, to the American Bridge Co.; 1600 tons for an office building on West Thirty-fifth Street, and 1000 tons for a loft building at Twenty-first Street and Fourth Avenue, both to the Hay Foundry & Iron Works, and 300 tons for a loft in Long Island City to the National Bridge Co. Bids will be taken on May 11 for additional elevated work in Philadelphia amounting to 1500 tons. For an addition to the Standard Oil office building 1500 tons will be required. A building for the Castoria company, Varick and Grand streets, which would take 1600 tons, will be built of reinforced concrete.

We quote for mill shipment, New York, as follows: Soft steel bars, 2.62c. to 4.52c.; shapes, 2.72c. to 4.27c.; plates, 2.92c. to 4.27c., the minimum prices being for indefinite delivery and the higher prices for the second quarter; bar iron, flats, wider than 6 in., 4.57c.; ⅜ and 7/16 in., round and square, 5.27c.; light rounds, squares and flats, 5.77c., and other sizes, 4.27c.

High-Speed Steel.—The market is a little firmer. Prices continue at $1.25 to $1.30 per pound, New York. Business has been dull because of the railroad situation, although some producers are receiving a few cars.

Warehouse Business.—The situation is practically the same, except for a few carloads of material shipped previous to the strike that are now being received. One railroad has promised a fairly large number of cars for movement of steel in a few days. Sellers of open-hearth spring steel are expecting an increase in prices when present stocks are exhausted. Orders now being placed with the mills for third and fourth quarter are at an increase of about 35 per cent and some of the largest mills specify a minimum of four tons of large, three tons of medium and two tons of small sizes, with nothing under ¼ in. The strike in the brass and copper industry remains unsettled and with low warehouse stocks an early increase in prices is probable. We quote prices on page 1358.

Cast-Iron Pipe.—There still remains a scarcity of pipe and the quickest deliveries are about six months after the placing of orders. The recent raise of $4 a ton does not seem to have lessened orders except in the case of large pipe for complete new systems, as municipalities and private companies apparently wish to wait until prices are lower. Most of the orders, therefore, are sent in for immediately necessary additions to existing lines, particularly the distributing sections of those lines. It is reported that some makers are asking even more than the new price level. Lifting of embargoes has enabled some manufacturers to ship out supplies which had been accumulating. We quote 6-in. and heavier at $76.30, New York; 4-in., $79.30, with $2 additional for Class A and gas pipe.

Old Material.—Inactivity continues. There is practically no new buying, however, and consumers, brokers and dealers are merely marking time awaiting developments. On the basis of the few sales made, we have marked prices lower on seven items, the biggest drop being in old car wheels, which have declined $2.

Buying prices per gross ton, New York, follow:

Heavy melting steel	$19.50 to $20.00
Rerolling rails	29.00 to 30.00
Relaying rails, nominal	52.00 to 54.00
Steel car axles	36.00 to 37.00
Iron car axles	43.50 to 44.00
No. 1 railroad wrought	31.50 to 32.50
Wrought iron track	22.00 to 22.50
Forge fire	16.00 to 16.50
No. 1 yard wrought, long	25.00 to 25.50
Light iron	9.00 to 10.00
Cast borings (clean)	17.50 to 18.00
Machine-shop turnings	15.00 to 16.00
Mixed borings and turnings	15.00 to 15.50
Iron and steel pipe (1 in. min. diam., not under 2 ft. long)	20.50 to 21.50
Stove plate	28.00 to 28.50
Locomotive grate bars	27.00 to 27.50
Malleable cast (railroad)	29.00 to 30.00
Old car wheels	36.00 to 37.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	$39.00 to $40.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	38.00 to 39.00
No. 1 heavy cast, not cupola size	32.00 to 33.00
No. 2 cast (radiators, cast boilers, etc.)	31.00 to 32.00

Phillips Isham, dealer in pig iron, coke, steel and alloys, has moved from the Liberty Tower Building to 227 Fulton Street, New York.

St. Louis

ST. LOUIS, May 3.

Pig Iron.—There has been a little selling of pig iron for prompt shipment during the past week, but otherwise the market was bare of developments. The prices remain at the same figure as last reported and forward delivery business has almost entirely ceased. The foundries are chiefly operating for local consumption so far as fuel and iron supplies permit and none of the industries which were compelled to slow up or cease operations by the railroad strike has been able to increase its output. Some supplies of pig iron are coming in from furnaces being handled from team tracks to the buyers, but practically none is being handled directly to the foundries. No deliveries are being made to the St. Louis side of the river at all, the system referred to being in operation on the east side with transfer by truck across where available. Furnaces are also being reported in bad position to ship and this is still further interfering with business.

Coke.—In coke no business is appearing either in purchases for forward delivery or for prompt shipment, the latter being rendered impossible by the railroad and switching conditions.

Finished Iron and Steel.—In finished products there has been a slight improvement in delivery, although material has to be handled from distant yards and switches instead of being run in to the delivery point on switches. There has been no change in prices and forward delivery contracts are not being sought or entered into at present. A sale of about 1200 tons of 75-lb. standard section steel rails to an Arkansas road was about the only item of consequence appearing during the week. In the warehouses material is at a very low ebb because of the switchmen's strike, but some is being obtained through trucking from outside yards and switches. For stock out of warehouse we quote as follows:

For stock out of warehouse we quote as follows: Soft steel bars, 3.94c.; iron bars, 4.59c.; structural material, 4.04c.; tank plates, 4.24c.; No. 10 blue annealed sheets, 5.09c.; No. 28 black sheets, cold rolled, one pass, 8.10c.; No. 28 galvanized sheets, black sheet gage, 9.60c.

Old Material.—The scrap market is in the doldrums, the dealers awaiting developments in the railroad strike which has put a quietus on the movement of material. In consequence of the lack of transactions, there are no changes in quotations to report, although naturally the absence of business tends to a softer market. The figures given, therefore, are purely nominal. The Helmbacher and Madison mills are attempting to open up further capacity, but actual results are not determinable. No lists have appeared, but some are expected within the week as is usual at the first of the month.

We quote dealers, prices, f.o.b. customers works, St. Louis industrial district, as follows:

Per Gross Ton

Old iron rails	$32.50 to $33.00
Old steel rails, rerolling	31.50 to 32.00
Old steel rails, less than 3 ft.	26.00 to 26.50
Relaying rails, standard sections, subject to inspection	50.00 to 55.00
Old car wheels	34.50 to 35.00
No. 1 railroad heavy melting steel	22.50 to 23.00
Heavy shoveling steel	21.50 to 22.00
Ordinary shoveling steel	21.00 to 21.50
Frogs, switches and guards, cut apart	24.00 to 24.50
Ordinary bundled sheets	14.50 to 15.00

Per Net Ton

Heavy axle and tire turnings	16.00 to 16.50
Iron angle bars	29.50 to 30.00
Steel angle bars	22.00 to 22.50
Iron car axles	39.50 to 40.00
Steel car axles	33.50 to 34.00
Wrought arch bars and transoms	31.00 to 31.50
No. 1 railroad wrought	25.50 to 26.00
No. 2 railroad wrought	23.50 to 24.00
Railroad springs	22.50 to 23.00
Steel couplers and knuckles	24.00 to 24.50
Locomotive tires, 42 in. and over, smooth inside	22.50 to 23.00
No. 1 dealers' forge	22.00 to 22.50
Cast iron borings	14.00 to 14.50
No. 1 busheling	21.50 to 22.00
No. 1 boiler, cut to sheets and rings	17.00 to 17.50
No. 1 railroad cast	35.00 to 35.50
Stove plate and light cast	30.50 to 31.00
Railroad malleable	26.00 to 26.50
Agricultural malleable	25.50 to 26.00
Pipes and flues	17.00 to 17.50
Heavy railroad sheet and tank	16.50 to 17.00
Railroad grate bars	27.50 to 28.00
Machine-shop turnings	13.50 to 14.00
Country mixed	19.00 to 19.50
Uncut railroad mixed	19.50 to 20.00
Horseshoes	24.50 to 25.00

Cincinnati

CINCINNATI, May 4.

Pig Iron.—The local pig iron market is quiet, though a number of 500-ton lots were disposed of in this territory during the week. One interest sold 600 tons of Southern foundry, silicon 2.25 to 2.75, to a nearby melter at $44, furnace; another reports three sales of 600 tons each of Southern foundry, silicon 1.75 to 2.25, at $42, Birmingham, for second half delivery, while some small lots for prompt shipment went as high as $44, Birmingham, for the base grade. A sale of 500 tons of Northern iron, silicon 3.25 to 3.75, with manganese over 1 per cent, is reported at $49.25, furnace. Jackson County silvery iron is now being quoted at $58 for 8 per cent, and one furnace at least is quoting $59.50. Virginia irons are firm at $44 and southern Ohio at $45. No sales of basic or malleable are reported and quotations given below may be regarded as nominal. Lawrence furnace of the Marting company at Ironton, which has been banked for two weeks on account of fuel shortage, will resume operations this week, as sufficient coke has been received to keep running for possibly three weeks.

Based on freight rates of $3.60 from Birmingham and $1.80 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base price)	$45.60
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	46.85
Ohio silvery, 8 per cent sil.	59.80
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	46.80
Basic Northern	41.80
Malleable	$45.80 to 46.80

Coke.—The coke situation shows no improvement, and foundries are running close to the ragged edge. Coke is moving in a small way from both New River and Wise County fields, but not a pound of Connellsville has been received since the outlaw railroad strike commenced. We note the sale of a small tonnage of Wise County foundry coke for prompt shipment at $15, ovens. This is generally considered to be higher than the market, as most producers are quoting $13 to $14 for spot, and $12 for contract coke. A Connellsville producer offered, subject to prior sale, a considerable tonnage of foundry coke at $11.50, furnace, for May shipment. New River coke for prompt shipment is quoted at $13 to $14.

Finished Material.—Sheet mills in southern Ohio have not as yet been seriously affected by the railroad strike, though the American Rolling Mill Co. at Middletown is having some difficulty in shipping its product owing to embargoes existing at other points. The Newport Rolling Mill Co. is getting a fair supply of cars, and is still operating to capacity. The Whitaker-Glesner mills at Portsmouth up to this week have been getting a full supply of cars, though a shortage of box cars developed during the latter part of the week. Consumers of sheets are pretty well covered for second and third quarter needs, though there are still a large number of inquiries from other districts coming in. All mills in this district are operating at full capacity, and production is steadily catching up with the demand, with the result that better deliveries can now be made by mills. Warehouses report demand for iron and steel products still heavy, particularly blue annealed sheets and cold rolled steel bars. Deliveries are somewhat improved, though large tonnages shipped some time ago have not yet come through. In the finished material line, the Ferro-Concrete Construction Co. has been awarded a contract for two warehouses for the American Tobacco Co. at Richmond, Va., which involve about 300 tons of steel. Bids are being asked for an addition to the Power Building in Cincinnati, which will take several hundred tons. Prices on iron and steel products remain practically the same as last week, with the exception of blue annealed which is now quoted by local warehouses at 7.50c., an advance of ½c. per lb.

Jobbers quote: Iron and steel bars, 5c. to 6c.; structural shapes, 5.10c.; plates, 5c.; steel bands, 6.25c. base; No. 10 blue annealed, 7.50c.; No. 28 black sheets, 7.75c. to 8.75c.; No. 28 galvanized sheets, 9c. to 10c.

High Speed Steel.—The labor troubles threatening the machine tool industry have affected the demand for high speed steel to some extent, though business is reported as fair. Rumors of a cut of 10 per cent in the price of high speed steel by some manufacturers cannot be confirmed, and the prices quoted are the same as those ruling for some time past, $1.25 to $1.40 per lb.

Old Material.—The scrap market is quiet, and prices are off from $1 to $2 a ton. Relaying rails, borings and turnings have slumped $2, while rerolling rails, railroad wrought, and malleable cast have been marked down $1. A local dealer purchased 2000 tons of heavy melting steel from a central Ohio producer during the week, at a price reported to be $22 a ton. A sale of about 5000 tons of steel scrap by the Government is being held this week at Dayton, Ohio, and it is expected that bidding will be lively. Cast scrap is reported as very scarce and prices are holding firm. One

foundry purchased a small tonnage of cast scrap during the week, paying $42 delivered.

We quote as follows:

	Per Gross Ton
Bundled sheets	$16.00 to $17.00
Old iron rails	27.00 to 28.00
Relaying rails, 50 lb. and up	48.00 to 49.00
Rerolling steel rails	29.00 to 30.00
Heavy melting steel	21.50 to 22.50
Steel rails for melting	24.00 to 25.00
Car wheels	29.00 to 30.00
	Per Net Ton
No. 1 railroad wrought	$25.00 to $26.00
Cast borings	11.50 to 12.00
Steel turnings	9.50 to 10.00
Railroad cast	31.00 to 32.00
No. 1 machinery	35.00 to 36.00
Burnt scrap	22.00 to 23.00
Iron axles	29.50 to 30.00
Locomotive tires (smooth inside)	23.50 to 24.50
Pipes and flues	17.00 to 17.50
Malleable cast	22.00 to 22.50
Railroad tank and sheet	16.00 to 16.50

Cleveland

CLEVELAND, May 4.

The railroad situation in this territory is apparently fully as bad as a week ago and mill operations show little improvement. The American Steel & Wire Co. has resumed operation of its Bessemer plant in Newburg, and is able to ship some of its product in carloads. Other local steel plants and blast furnaces are unable to make any shipments. The McKinney Steel Co. and the Otis Steel Co. continue to operate their plants at full capacity. Toledo and Erie furnaces are shipping their entire product, but M. A. Hanna & Co. are able to ship very little iron from their furnaces. The United Alloy Steel Corporation, Canton, has only three open-hearth furnaces operating out of 18. Some steel is now being shipped from the Pittsburgh district mills to Cleveland in trainload lots, as it is almost impossible to get carloads through. The consumers have agreed that if the railroads cannot make deliveries to their plants, they will haul the steel from a central point. Many local manufacturers have curtailed operations or shut down departments because of the lack of steel, and the situation with them is daily growing worse. The situation in Detroit is critical. For several days the company that furnishes power for most of the Detroit plants cut its power supply 50 per cent. Full power was restored Saturday, but large automobile manufacturers have been using their surplus stocks of steel and are running out of various parts, and several are in danger of having to shut down entirely.

Pig Iron.—The market is quiet, although furnaces that are still able to ship iron report a fair demand for small lots of foundry iron for prompt shipment. One seller reports sales aggregating 900 tons, mostly for prompt shipment at $44. Some Cleveland consumers are hauling iron in trucks from local blast furnaces, and efforts are being made to ship trainload lots to large foundry consumers. Prices range from $43 to $44 for No. 2 foundry iron for the last half, but as high as $45 is being asked for prompt shipment. A Michigan stove manufacturer is inquiring for 2000 tons of foundry iron for the last half. A Northern Ohio consumer has purchased 1500 tons of basic iron from a western Pennsylvania furnace at $43, furnace, for early shipment.

We quote, delivered Cleveland, as follows, based on 40c. switching charge for local iron, a $1.40 freight rate from Valley points and $5 from Birmingham:

Basic	$43.40
Northern No. 2 foundry, sil. 1.75 to 2.25	43.40
Southern foundry, sil. 2.25 to 2.75	$48.70 to 49.70
Gray forge	41.40
Ohio silvery, sil. 8 per cent	61.40
Standard low phos., Valley furnace	48.00 to 50.00

Iron Ore.—The dock employees at the upper Lake ports have started to work, a compromise having been made following their demands for an increase in wages. The loading of ore was resumed in a small way Monday. However, very little ore will be shipped until the railroad strike situation clears up. Railroads are able to handle very little ore, and were shipments received at lower Lake docks in any considerable volume, it is believed that traffic would be almost completely tied up. Until the railroad situation improves, most of the shipments will be to Lake front furnaces. One ore firm has shipped four cargoes since the opening of navigation, three of which they were able to send through to destination in solid trainloads, and the fourth was placed on docks. Generally the ore shippers will attempt to do very little until there is a decided improvement in the railroad situation.

We quote, delivered, lower Lake ports: Old range Bessemer, $7.45; old range non-Bessemer, $6.70; Mesaba Bessemer, $7.20; Mesaba non-Bessemer, $6.55.

Coke.—Foundries are suffering more from the scarcity of coke than from the lack of pig iron. This is particularly true of small plants, as some of the large consumers have been able to get train lots of fuel. A Cleveland selling agency has arranged for the shipment of two or three train loads of Connellsville coke to be distributed among small consumers, and the arrival of this will relieve the local situation. The sale of a small amount for prompt shipment foundry coke is reported at $13.

Finished Iron and Steel.—Most mills have withdrawn from the market until the strike situation clears up and there is little new inquiry. Local mills are piling their steel. Some shipments are coming from a western Pennsylvania mill over the Baltimore & Ohio Railroad and from a Chicago warehouse. A Cleveland mill has advanced price to 6.25c. for blue annealed sheets and to 8c. for black sheets, and has taken some business at these prices. There is considerable inquiry from Detroit automobile manufacturers for sheet contracts for the third quarter. Some inquiry for small billets for export has developed. Practically no structural work is being placed, although fabricators have made estimates on a good volume of work which has been held up.

Cleveland warehouses quote steel bars at 3.27c to 5c.; plates, 3.57c. to 5c., and structural material, 3.70c. to 5.10c.

Old Material.—The scrap market is virtually at a standstill. As dealers cannot move material, they are not trying to make sales. A great deal of scrap has accumulated in producers' yards and lower prices are predicted as soon as conditions permit the moving of material. However, at present there is not enough activity to develop any weakening tendency.

Dealers quote delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel	$23.50 to $24.00
Steel rails under 3 ft	25.00 to 27.75
Steel rails, rerolling	31.00 to 32.00
Iron rails	32.00 to 33.00
Iron car axles	41.00 to 42.00
Steel car axles	36.00 to 37.00
Low phos. melting scrap	26.25 to 26.50
Cast borings	17.00 to 17.25
Iron and steel turnings and drillings	13.50 to 14.00
Short turnings for blast furnaces	17.00 to 17.25
Compressed steel	19.50 to 20.00
Railroad wrought	28.00 to 29.00
Railroad malleable	31.00 to 32.00
Steel axle turnings	19.50 to 20.00
Light bundle sheet scrap	15.00 to 15.50
Drop forge flashings over 10 in.	17.00 to 17.50
No. 1 cast	41.00 to 42.00
No. 1 busheling	18.50 to 18.75
Railroad grate bars	29.00 to 30.00
Stove plate	29.00 to 30.00

Philadelphia

PHILADELPHIA, May 4.

Signs of a slowing down in business have been in evidence during the past week. Selling offices almost without exception attribute this to the railroad situation. While some improvement in transportation is noted, in certain respects the demoralization seems to be as serious as at any time since the beginning of the railroad strike. It seems to be generally recognized that a progressive reduction in the volume of iron and steel business is inevitable unless there is improvement in transportation. Many industries continue to be seriously affected by shortage of raw materials and the inability to ship out finished products.

Iron and steel production, however, has increased in the past week. Troubles due to lack of coal and coke have gradually been overcome, to some extent, at least. Plants are not running full, nor is it expected that they will be able to until rail traffic is more nearly normal.

The markets are devoid of new features, inquiries and orders being at about the lowest point reached in some time. The trade is in a quandary as to the ultimate outcome of the present situation. The attitude of a large eastern railroad, which was about to buy for second half, is significant. It has been stated to steel companies that the contemplated purchases by this

road will not be made at present owing to expectations of an easier supply and lower prices on steel products later in the year.

Pig Iron.—The past week has been extremely quiet. The principal demand is for shipments of iron already contracted for. Prices for foundry iron are strong. One large eastern interest has made another advance, this time to the basis of $47, furnace, for No. 2 plain, but other makers, with one or two exceptions, continue to quote foundry at $45, furnace, this price applying to No. 2 plain, with usual differentials for higher silicon. An eastern steel maker has been looking for basic iron in the past week, but has issued no formal inquiry. Makers quote $43 and $44, furnace. Sales of 600 and 500 tons of standard low phosphorus iron at $50, furnace, are noted. An eastern furnace has an inquiry for 10,000 tons of hematite iron from England.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace:

East. Pa., No. 2 X, 2.25 to 2.75 sil.	$47.05 to $47.35
East. Pa., No. 2 plain, 1.75 to 2.25 sil.	45.80 to 46.10
Virginia No. 2 plain, 1.75 to 2.25 sil.	47.35 to 48.10
Virginia No. 2 X, 2.25 to 2.75 sil.	49.35
Basic deliv. eastern Pa.	44.80
Gray forge	43.00 to 44.00
Standard low phos. (f.o.b. furnace)	50.00
Malleable	46.75
Copper bearing low phos. (f.o.b. furnace)	47.00

Coke.—The situation as to coke is practically unchanged. Spot furnace coke at $11 and spot foundry coke at $12 represent the market, but it is difficult to make contracts.

Ferroalloys.—Makers of ferromanganese report great pressure from steel companies for deliveries. The situation is perhaps a little easier, but railroad embargoes make it difficult to ship to the points where the alloy is most needed. Spiegeleisen is now quoted by two leading eastern makers at $75, furnace. About 4500 tons of manganese ore, which arrived last week from Georgia, in the Caucasus, was sold to a middle western interest at about 95 cents a unit. The price for manganese ore on contract is about 80 cents. The Georgian ore, however, was high grade, originally intended for chemical manufacture.

Semi-Finished Steel.—Little has been done in semi-finished steel in the past week, but one company reports sales of open hearth rerolling billets at $70, Pittsburgh, though $60 can still be done. Forging billets are quoted at $70 to $80, Pittsburgh.

Plates.—Inquiry for ship plates continue to come from the Pacific Coast, the latest calling for 12,000 tons of steel for tankers. The Southern Pacific Railroad has inquired for 1200 tons of plates and shapes, this in addition to inquiries for 5600 tons of shapes and 2700 tons of universal plates reported a week ago. New inquiry for plates for locomotives is also in the market. It is reported that one of the large eastern railroads, which was about to buy plates, shapes and bars for last half, will postpone buying, the reason assigned being the expectation of the purchasing department that steel will be easier to get and that prices may be lower later in the year. A Middle Western mill is offering deliveries of heavy plates in four to eight weeks at 3.75c., Pittsburgh. Eastern mills continue to quote 4c., but it is said this can be shaded in some instances.

Structural Shapes.—The demand has lessened, one reason being, it is stated, that independent fabricators are competing unsuccessfully for business in many instances owing to the fact that they must pay independent mills 3.75c. to 4c., Pittsburgh, for plain material. The leading interest continues to quote 2.45c., but cannot make satisfactory deliveries. The local building situation is affected by a strike of carpenters for $1.25 an hour.

Bars.—The demand for bars is in excess of the supply. The situation has not changed in the past few weeks. A leading independent quotes 4c., Pittsburgh.

Bolts and Nuts.—There is a good demand for bolts and nuts, particularly from the railroads.

Old Material.—The market continues in the same state of inactivity that has characterized it for the past few weeks. Price changes are downward. The quotation on No. 1 railroad wrought in this column last week was a typographical error. The correct quotation was $35 to $36, delivered. We quote for delivery at consuming points in this territory as follows:

No. 1 heavy melting steel	$24.00 to $24.50
Steel rails rerolling	32.00 to 33.00
No. 1 low phos., heavy 0.04 and under	30.00 to 31.00
Car wheels	40.00 to 41.00
No. 1 railroad wrought	34.00 to 35.00
No. 1 yard wrought	29.00 to 30.00
No. 1 forge fire	19.00 to 19.50
Bundled skeleton	19.00 to 19.50
No. 1 busheling	24.00 to 25.00
No. 2 busheling	18.50 to 19.50
Turnings (short shoveling grade for blast furnace use)	18.00 to 19.00
Mixed borings and turnings (for blast furnace use)	17.50 to 18.00
Machine-shop turnings (for rolling mill and steel works use)	18.50 to 19.50
Heavy axle turnings (or equivalent)	20.00 to 21.00
Cast borings (for rolling mills)	20.00 to 21.00
Cast borings (for chemical plant)	24.00 to 25.00
No. 1 cast	38.00 to 40.00
Railroad grate bars	29.00 to 30.00
Stove plate	28.50 to 29.50
Railroad malleable	29.00 to 30.00
Wrought iron and soft steel pipes and tubes (new specifications)	24.50 to 25.00
Iron car axles	45.00 to 46.00
Steel car axles	42.00 to 44.00

BRITISH PRICES ADVANCE

Traffic Congestion Almost Hopeless—British Lose Orders to Holland—Increased Ocean Freight Rates

(*By Cable*)

LONDON, ENGLAND, May 4.

The pig iron market is unchanged but advances in price are expected owing to the rise in the price of coal. The position in hematite steel is acute, but prices are unaltered. Ferromanganese has advanced from £35 to £37 for home trade and from £40 to £45 for export, with forward shipments sold up to £52. Foreign ore prices are weaker, with best Rubio having sold at 62s. 6d. c.i.f.

Traffic congestion is producing hopeless conditions, Northeast Coast works now having in stock fully 100,000 tons of material that it is utterly impossible to move. Steel extras have been named, in many cases an increase of 100 per cent.

According to reports, orders for iron and steel castings have been placed in Holland, owing to the excessive prices charged by British makers.

The tin plate market is quiet and prices remain steady. In black sheets, No. 24 has sold at £55 and No. 26 at £61 for July and August delivery.

Clyde shipbuilding interests have now more than 1,000,000 tons booked. Freight rates to Japan, China and the Straits Settlements have been advanced 25 per cent and a similar increase is expected in freight rates to India on July 1.

Lorraine furnaces state that owing to the failure of the Allies to enforce the treaty with Germany, insuring fuel supplies, they cannot deliver on the old, unexecuted, low-priced contracts on pig iron and will give the buyers the option of taking legal action or cancelling all low-priced contracts, replacing them at current quotations.

Luxemburg steel bars have sold at £29, f.o.b.

We quote per gross ton, except when otherwise stated, f.o.b. maker's works, with American equivalent figured at $3.86 for £1, as follows:

	£	s.	£	s.		
Ship plates	26	0 to	32	0	$101.36 to	$123.52
Boiler plates	28	10 to	35	0	110.01 to	135.10
Tees	25	10 to	33	0	98.43 to	135.10
Channels	24	15 to	33	5	95.53 to	128.34
Beams	24	10 to	32	0	94.57 to	123.52
Round bars, ¾ to 3 in.	27	0 to	35	0	104.22 to	135.10
Rails, 60 lb. and up	23	0 to	25	0	88.78 to	96.50
Billets	24	10 to	25	10	94.57 to	98.43
Sheet and tin plate bars, Welsh	31	0 to	35	0	119.66 to	135.20
Galvanized sheet, 24 g.	56	0 to	60	0	216.16 to	228.60
Tin plate, base box	3	12 to	3	14	13.88 to	14.24
Steel hoops	34	15 to	35	0	134.13 to	135.10
Cleveland basic iron	10	10			40.50	
West Coast hematite	14	5			55.00	
Cleveland No. 3 foundry (export to allies)	10	5			40.56	
Ferromanganese	35	0 to	40	0	135.10 to	154.40
Coke	2	15½			10.71	

GERMANY FILLS SMALL ORDERS

Buys Pig Iron and Books Small Orders in Holland and Argentina—Rail and Pig Iron Inquiries

Trade with the Far East is confined chiefly to the Dutch East Indies and a few inquiries for light and medium weight rails from Japan, which continues to place a few orders despite recent financial difficulties. Although with most exporters business from this market is at a standstill, one Japanese export house the past week placed an order for 45,000 boxes of tinplate at about $10.75 f.o.b. mill. An inquiry has been issued by the Japanese government for 10,000 tons of 60-lb rails for shipment to a port in Corea. With the exception of sugar mills, business in machinery has practically ceased. Exporters generally look for a resumption of more moderate purchasing by Japan in a few months.

European markets continue to buy to satisfy immediate needs, paying high prices at adverse exchange rates only because they are unable to obtain material elsewhere. Germany shows some activity in filling small orders. The Colonial government of the Netherlands recently inquired through its New York bureau for a quantity of wheels and axles for mining cars, but after receiving quotations from American mills of $30 per set, placed the order in Germany at $15.80. Some small business has been taken by Germany in Argentina.

A recent sale of 2000 tons of pig iron to Rotterdam, Holland, made by an exporter in New York, had for its ultimate destination a point in Germany. Inquiry has been made by a British concern for 5000 tons of girder rails for street railroads for shipment to Sweden.

Sales of spiegeleisen to Europe at the present price of $75 have dropped off considerably. While Italy continues to inquire for pig iron, light rails and other material a large number of export houses are not anxious to do business even on letters of credit, because of present political and financial conditions. The New York branch of a British concern has orders from the home office not to accept Italian orders under any circumstances.

Inquiries from South America are few, a number being for light rails. The railroads of Argentina are inquiring for 12,000 tons of 75-lb. rail to close about June 15.

German Industry to Advertise Abroad

The *Reichsverband Deutscher Industrieller* associated with the *Verein Deutscher Ingenieure* is planning an extensive advertising campaign in foreign markets.

The publication of an engineering export paper is being arranged by the *Allgemeine Anzeigen Gesellschaft*. The paper, which will be published in German, English, French and Spanish, is being heavily subscribed to for advertising and subscriptions by German industries, the Krupp company having contracted for 3000 copies an issue for five years. Plans include the establishment of offices in foreign capitals for advertising and news gathering.

Subscription to $500,000 worth of the 6½ per cent gold bonds of the Italian Government was recently announced by President William H. Woodin of the American Car & Foundry Co. Among the other subscribers are: The United States Steel Corporation, $1,000,000; the American Locomotive Co., $100,000 and the Railway Steel Spring Co., $100,000.

Under the terms by which Italy has re-opened commercial relations with the Russian Soviet Government, the latter is permitted to establish a bureau at Rome and the former a bureau at Moscow for the furtherance of trade relations between the two countries. The Swiss Government is considering the advisability of re-opening trade relations with the Russian Soviet.

IRON AND INDUSTRIAL STOCKS

Further Decline Has Carried Issues To Below Intrinsic Values

The general trend of stock values has continued downward during the past week. This depression has carried some issues below intrinsic values. No better illustration of this fact is found than in United States Steel common. The corporation in the past 18 years has spent nearly $900,000,000 in new construction, has charged off nearly $1,500,000,000 for depreciation, sinking fund and ordinary repairs and added something like $432,000,000 to its working capital, thereby adding approximately $146 to the intrinsic value of its common shares. Today, the corporation has enough business on its books to keep its plants operating at capacity for months, possibly the biggest part of 1920, and has taken business at prices which insure regular dividend payments. And yet the stock has sold within striking distance of $90 a share within the past fortnight.

Financial and industrial interests possibly are disturbed over the prospects of increased taxation; at least the recent course of prices for securities suggests they are. Then, too, the money situation continues a disturbing factor, and the freight transportation situation is not righting itself as quickly as most people hoped, and in addition there is a possibility of some industries being forced to close because of their inability to secure raw materials. It is not generally believed that the petition to rehear the Steel Corporation case has had much to do with the recent action of stock values, and the talk of Bethlehem, Lackawanna and Midvale consolidation appears to have had but a temporary influence on the market for these shares.

Nor has the market for copper shares paid much evident attention to the announcement that the establishment of credits for foreign buyers of American copper will soon be an accomplished fact. Although the iron and steel and allied industries give little evidence of it, the impression is growing that prices for commodities in general have reached the peak, which in a large measure accounts for the recent action of securities prices.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com.	34¼ - 37⅞	Lake Sup. Corp..	14⅜ - 16¾
Allis-Chalm. pf...	75 - 79	Midvale Steel.....	43¼ - 46¼
Am. Can com....	39⅛ - 42½	Nat-Acme	35⅝ - 36½
Am. Can pf.....	90⅜ - 93	Nat. E. & S. com.	70 - 76
Am. C. & F. com.	128 -135⅞	Nat. E. & S. pf..	— - 95
Am. C. & F. pf...	110½ -111½	N. Y. Air Brake..	95⅛ -100¼
Am. Loco. com...	91 - 96¼	Nova Scotia Steel	55 - 60
Am. Loco. pf.....	— -103	Press. Steel com.	95 -102
Am. Stl. F. com..	39⅝ - 42	Press. Steel pf...	100 -100⅛
Am. Stl. F. pf....	88½ - 89	Ry. Stl. Spg. com.	90⅛ - 94
Bald. Loco. com..	109¼ -117¾	Replogle Steel....	78½ - 92⅜
Bald. Loco. pf....	100½ -100¾	Republic com.....	90½ - 96⅞
Beth. Steel com..	86 - 94½	Republic pf.....	96 - 97¼
Beth. Stl., Cl. B.	86⅝ - 95¾	Sloss com.....	65 - 68⅞
Beth. Stl., 8% pf.	108 -109	Superior Steel....	46½ - 50
Chi. Pneu. Tool..	85½ - 91	Sup. Steel 1st pf.	— -101¾
Colorado Fuel....	35⅛ - 36½	Transue-Will. ...	51¾ - 54⅛
Cru. Steel com...	131 -239	Un. Alloy Steel..	43½ - 45
Cru. Steel pf.....	96½ - 96¾	U. S. Pipe com..	16½ - 17½
Gen. Electric.....	142½ -149½	U. S. Pipe pf....	46⅝ - 46¾
Gt. No. Ore Cert.	35 - 35¾	U. S. Steel com..	92¾ - 97⅛
Gulf States Steel.	55½ - 57½	U. S. Steel pf....	107 -110
Int. Har. com....	118 -126½	Vanadium Steel..	74⅜ - 83½
Int. Har. pf.....	— -109¾	Va. I. C. & Coke.	96 -104
Lackaw. Steel....	75¼ - 83¼	Westingh. Elec...	48¼ - 50

The Pittsburgh Steel Co., Pittsburgh, reports for nine months ended March 31 last, sales of $20,192,633, against $26,028,203 in the same period in 1919, and net profits after setting aside estimated income and excess profits taxes of $1,150,502, contrasted with $1,879,208 in the corresponding period in 1919.

An additional 60,000 shares of common and 4800 of preferred stock of the Standard Sanitary Mfg. Co. have been listed on the Pittsburgh Stock Exchange, making a total of 120,000 common and 44,800 preferred now listed. Earnings in 1919 were $3,999,995 net, from operations; after deducting for depreciation, etc., the net earnings were $2,818,449.

HIGHER BELGIAN PRICES

Quotations Still Advancing—Buying Limited to Most Urgent Needs

BRUSSELS, April 15.—Further increases in prices of iron and steel products were noted in Belgium during the first two weeks of April, and furthermore announcement is made that there will be a further rise under the pretext that there is no assurance for the future with regard to the regularity of supplies of ore and pig iron or as to stabilization in the wages of workers. It was officially announced yesterday that the first train of German coal would be received in Belgium April 19. No. 3 Lorraine pig was quoted yesterday at 900 francs the ton, f.o.b. point of departure; English hematite, 850 c.i.f. Antwerp; steel or iron scrap, 23 to 25 francs the 100 kilos; beams, 140 francs for interior, 150 for exportation; rails, 140 francs; ordinary sheets, 160 francs; 3 mm. sheets, 190 francs; washed coke, 145 francs 50; ordinary coke, 115 francs 50, f.o.b. point of departure.

The Belgian Government has asked the Syndicat des Constructeurs Belges for bids on 3000 large flat cars.

The arrival is announced at Antwerp of several lots of billets and blooms. Rolling mills which buy semi-finished material are working at full capacity, having at their disposition large quantities of scrap from France and the Belgian front.

Following is the official table of iron and steel and zinc production at present compared with 1913:

	Production February, 1920, metric tons	Average monthly production in 1913 (tons)	Per cent in Feb., 1920, compared with 1913
Pig iron	53,278	207,058	25.7
Iron (fine)	27,124	25,362	108.0
Steel (ingots and castings)	71,743	205,552	34.9
Raw zinc	4,560	17,019	26.8

Increase of pig over January was 12,448 tons, or 30.5 per cent; fine iron, an increase of 1030 tons, or 3.9 per cent; steel (ingots and castings), 14,868 tons, or 26.1 per cent; raw zinc increase of 500 tons, or 12.3 per cent.

Coal production attained in February 88.1 per cent that of February, 1913.

As to bolts, order books are filled and the industry in general refuses to accept further orders, giving as reasons difficulty of obtaining materials, long delays, high wages of labor, etc. This is not the case with the foundries, which, although they have much work, are accepting contracts. Construction material plants are also filled with orders for Belgium and they are devoting themselves especially to Belgian reconstruction rather than seeking export business which is being offered them.

At the Usines Gilson at La Croyere, another Martin furnace will soon be put into operation, while at the Usines Esperance-Longdoz another Martin furnace will be working in two months.

The Usines Phenix Works is operating at full capacity.

Coal Supply Limited

The first week of April gave no indication of a radical change in the coal crisis, production hardly increasing or the supplies from Germany, which country had been expected to be stopped by the series of political developments. The experience of the last few months has shown Belgian iron and steel men that salvation is not to be expected from this side and that they can count only on themselves. The only way seems to be to endeavor to increase the output of the Belgian collieries. La Societe Civile des Charbonnages de Bois-du-Luc et d'Havre will soon operate another mine equipped with the most modern appliances.

The increase in prices of iron and steel products during the first week of April continued under such conditions that consumers abstained from buying except in case of extreme necessity. The market for half-finished products is becoming more and more narrow, even nil, offers being extremely rare. Supplies are unavailable and quotations all out of proportion. The situation of transforming plants would be improved if half-finished products ordered in Lorraine and accepted by the sequester were delivered. But the Lorraine concerns, it is claimed here, are not respecting the agreement of the sequester, although this clause was stipulated in the contracts. A judgment was recently rendered making obligatory the execution of the contracts. The market for steel products continues to show real firmness and there is an appreciable increase in prices. The big plants refuse to make prices. Nevertheless some contracts for long-time delivery have been concluded at high prices.

Strike in Liege District

During the week a strike occurred in the metallurgical industry in the Liege district. It was estimated that about 10,000 went out and work was completely suspended in the Cockerill plant at Seraing, the Fabrique Nationale at Herstal, and a large number of factories of less importance. The reason for the strike was the question of the distribution of hours of work. From April 1 it was agreed that employees should work 48 hours a week, but with application of the Saturday half holiday principle, that is, that the plants would shut down Saturday afternoon and on other days the men would work nine hours or eight and a half. The strikers desired that their work should not exceed eight hours a day, even if it were necessary to work Saturday afternoon.

Seventy per cent of Belgian material and machines taken from iron and steel and other plants by the Germans has been recovered by the Belgian service charged with this work. The number of machines involved is 10,751, worth about 15,800,000 francs, and 32,683 tons of material for 5,200,000 francs.

For January, 1920, the metallurgical production was the following: Pig iron, 40,830 tons; steel (ingots and cast pieces), 56,875; finished iron, 26,094; crude zinc, 4060 tons.

The action of the Acieries Angleur in making an arrangement with the Societe des Charbonnages Belges, in order the better to assure operations through proper provisioning of coal and coke, has been followed by a similar agreement made by the Athus-Grivegnee company with the Societe des Charbonnages de la Louviere and of Sars-Longchamps, which has just relighted its coke ovens. Thanks to this arrangement, the Athus company is able to start a second blast furnace.

Bids on Steel Supplies

Bids were opened by the public works service for 42 lots of steel supplies, but only four companies put in their prices, which shows how factories are burdened with orders, also the uncertainty of the market in the presence of which producers prefer to abstain.

Belgian Railway Service

The situation of the Belgian State railways is now such that they can provide 60 per cent of the passenger trains in operation before the war and 80 per cent of freight trains. Official figures announce that for the second semester 1919, 16,907 passenger cars and 222,715 freight cars were put into running condition and repaired in the State railway shops, in those of private industry, and by repair gangs. The State railroad administration says the present resources of the Belgian system amounted to 5660 passenger cars and 1016 baggage cars against 8594 passenger cars and 1541 baggage cars in 1914. More than a third of this material, the upkeep of which was impossible during the war, is being repaired in private or State railroad shops. As to locomotives, the number Aug. 1, 1914, was 4543 units, of which 85.5 per cent was in running condition. Up to Oct. 1, 1919, the number was 4770, of which 60 per cent only had sufficient hauling power.

The keeping properties of varnish products in their original unopened containers and in opened containers, partly filled containers, dip tanks, etc., are discussed by E. J. Cole, chief chemist Hilo Varnish Corporation, Chicago, in the April issue of the World, the house organ of the Hilo corporation.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper New York		Tin	Lead		Zinc	
April	Lake	Electro-lytic	New York	New York	St. Louis	New York	St. Louis
28	19.25	19.25	61.50	8.75	8.40	8.35	8.00
29	19.25	19.25	61.00	8.75	8.40	8.35	8.00
30	19.25	19.25	60.75	8.75	8.40	8.35	8.00
May							
1	19.25	19.25	....	8.75	8.40	8.30	7.95
3	19.25	19.25	61.00	8.75	8.40	8.30	7.95
4	19.25	19.25	60.25	8.75	8.40	8.30	7.95

NEW YORK, May 4.

Recovery from the effects of the railroad strike has not been sufficient to have a marked effect upon the markets, although in some localities conditions are approaching normal. The copper market is quiet and prices are firm, but business is very light. The tin market continues extremely quiet, but a little more interest is being shown by consumers. There has been very little change in the lead market from those existing a week ago. The zinc market continues lifeless but prices are steadier. The antimony market is unchanged.

New York

Copper.—Not only the railroad strikes, but the strikes at mines and refineries have so affected the general copper market that its future course is hard to predict. Some of the large refineries have been obliged to close or greatly curtail operations, and there is a question as to the ability of some sellers to meet contracts in the near future. The ultimate effect of these conditions may not be noticed until June. While transportation conditions have improved slightly, the foregoing factors are of larger importance so far as the general market is concerned. Domestic consumers are purchasing very little, but foreign demand continues of fair proportions, considering conditions. The larger producers maintain their quotations firmly at 19.25c., New York, for both Lake and electrolytic for early delivery, with about 19.50c. asked for third quarter in some cases. There still exists an outside market, where quotations are around 18.75c., New York, for early delivery. An interesting development is the final arrangement yesterday for financing the copper needs of France in this country, whereby that country will now be able to purchase its requirements.

Copper Averages.—The average price for Lake copper, for the month of April based on daily quotations in THE IRON AGE, was 19.36c. The average price for electrolytic copper was 19.19c.

Tin.—This market continues extremely quiet and devoid of feature. Because of labor conditions and the transportation demoralization a general depression exists and there has been very little buying. Consumers are commencing to show interest in future shipments, but the erratic movement of exchange has hindered this from developing into active purchases. It is recognized, however, that there is a dormant inquiry which may come to the surface any day. On Friday 150 tons of future shipment tin was sold on the New York Metal Exchange at prices ranging from 59.62½c. to 60c., depending on the position. Prices for spot Straits tin, New York, have been fairly firm during the week, and to-day the quotation is 60.25c., New York. Deliveries of tin into consumption for the month of April were 3305 tons, of which 2700 tons came in at Atlantic ports and the quantity in stocks and landing April 30 was 2676 tons. Imports for the first four months of 1920 have been 16,783 tons, as compared with 6341 tons May 1, 1919. Arrivals thus far this month have been 1105 tons, with 1966 tons still afloat.

Lead.—The principal change in the general situation in this market has been a practical disappearance of the low offerings referred to last week and as a consequence the market is steadier. More lead for spot delivery has been sold up to 9.37½c., New York, but shipments from the West are still tied up because of conditions resulting from the strike. All sales made at present are negotiated subject to strikes and embargoes. The leading interest continues to quote for early delivery 9c., St. Louis, or 9.25c., New York, while the outside market is quoted at 8.40c., St. Louis, or 8.75c., New York.

Zinc.—There is very little change in this market, except that there seems to be less selling by exporters of metal bought on this side and replaced on the other side at a lower figure. The leading producers continue to be uninterested in selling at present levels, and consumers do not appear to be anxious to buy because of the general business and transportation conditions. Prime Western for delivery into July is quoted at around 7.95c., St. Louis, or 8.30c., New York, with demand very light.

Antimony.—Wholesale lots of the better grades for early delivery are quoted at 11c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, in wholesale lots for early delivery, is quoted at 33c. by the leading producers, but can be bought from outside interests at around 31.50c.

Old Metals.—There is very little life to the market. Although but few transactions take place, the tendency is to keep prices up. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	19.00
Copper, heavy and wire	18.00
Copper, light and bottoms	16.00
Brass, heavy	14.00
Brass, light	10.00
Heavy machine composition	18.00
No. 1 yellow rod brass turnings	11.25
No. 1 red brass or composition turnings	16.00
Lead, heavy	7.75
Lead, tea	6.25
Zinc	5.75

Chicago

May 4.—Cars are moving somewhat more freely and shipments are moving through points which had been heretofore embargoed. The improvement in the railroad situation, however, has not been sufficient to permit of much activity in the metals. Copper is slack and unchanged in price. Such tin as has been available has been in good demand, with prices the same as a week ago. Lead has declined but is commencing to move, whereas until recently no shipments whatever were coming through. Spelter has declined and is being purchased more freely. Antimony is quiet. The old metals remain unchanged. We quote Lake copper 19.15c. for carloads, tin 65c. to 66c., lead 8.70c., spelter, 8.10c., and antimony 12c. On old metals we quote copper wires, crucible shapes, 15.50c.; copper clips, 15.25c.; copper bottoms, 14c.; red brass, 15.50c.; yellow brass, 11.25c.; lead pipe, 7c.; zinc, 6c.; pewter, No. 1, 37.50c.; tinfoil, 40c., and block tin, 50c., all these being buying prices for less than carload lots.

St. Louis

May 3.—The non-ferrous markets have been quiet with lead in car lots selling at the close at 8.75c. and spelter at 8c. In less than car lots the quotations are: Lead, 9.12½c.; spelter, 9.25c.; tin, 67c.; copper, 20c.; antimony, 12.50c. In the Joplin district ores have been softer because of the difficulties of transportation. The tendency is to reduce production until better conditions prevail. Zinc blende, basis 60 per cent, is held at $45 to $47.50 per ton; calamine, basis 40 per cent, $35 to $37 per ton, and lead, basis 80 per cent, $110 per ton. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 9c.; heavy yellow brass, 10.50c.; heavy red brass and light copper, 15c.; heavy copper and copper wire, 16c.; light copper, 13c.; zinc, 5c.; lead, 6c.; tea lead, 3c.; pewter, 35c.; tinfoil, 43c.; aluminum, 23c.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, with revisions effective from Jan. 1, 1920, in carload lots, to points named, per 100 lb. are as follows:

New York, 27c.; Philadelphia, 25c.; Boston, 29½c.; Buffalo, 21c.; Cleveland, 17c.; Cincinnati, 23½c.; Indianapolis, 24½c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; all in carloads, minimum 36,000 lb. To Denver the rate is 99c., minimum carload 40,000 lb; Omaha, 59c., minimum carload 36,000 lb.; New Orleans, 38½c., minimum carload 36,000 lb.; Birmingham, 57½c., minimum carload 36,000 lb. To the Pacific Coast the rate is $1.25 per 100 lb. on articles of iron and steel, minimum carloads 80,000 lb., while the structural steel rate is $1.25, minimum carload 50,000 lb., or $1.315, minimum carload 40,000 lb. The rate on ship plates, Pittsburgh to Pacific Coast, is $1 per 100 lb., minimum carload 80,000 lb. On wrought iron and steel pipe, the rate from Pittsburgh to Kansas City is 56c., to St. Paul 49½c., to Denver 99c., to Omaha 56c., all in carload lots, minimum 46,000 lb. To Jacksonville, Fla., all rail carloads, 41½c., minimum 36,000 lb., less than carloads, 59c.; rail and water, carloads 34½c., minimum 36,000 lb.; less than carloads 46½c. On iron and steel items not noted above, the rates vary somewhat, and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural size, 2.45c. to 4c.

Wire Products

Wire nails, $3.25 to $4 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.50 and shorter than 1 in., $2. Bright basic wire, $3 to $3.50 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3 to $3.50; galvanized wire, $3.70 to $3.95; galvanized barbed wire and fence staples, $4.10 to $4.45; painted barbed wire, $3.40 to $3.75; polished fence staples, $3.40 to $4.50; cement-coated nails, per count keg, $2.85 to $3.75; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60 per cent off list for carload lots, 59 per cent for 1000-rod lots, and 58 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.50 base
Large boiler rivets.....4.60 base
Small rivets .....50 per cent off list
Small machine bolts, rolled threads,
40, 10 and 5 per cent off list
Same sizes in cut threads.....40 and 5 per cent off list
Longer and larger sizes of machine bolts,
30 and 10 per cent off list
Carriage bolts, ⅜ in. x 6 in.:
Smaller and shorter, rolled threads.40 and 5 per cent off list
Cut threads .....30 and 10 per cent off list
Longer and larger sizes.....30 per cent off list
Lag bolts .....50 per cent off list
Plow bolts, Nos. 1, 2 and 3 head.....40 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.n.c., and t. nuts ⅜ in. x 4 in.:
Smaller and shorter.....35 per cent off list
Longer and larger sizes.....25 per cent off list
Hot pressed and cold pressed sq. or hex. blank nuts.2c. off list
Tapped nuts .....$1.75 off list
Semi-finished hex. nuts, U. S. S. and S. A. E.:
⅝-in. and larger.....60 and 5 per cent off list
9/16-in. and smaller.....70 and 5 per cent off list
9/16-in. and smaller A. L. A. M. or S. A. E.:
70, 10 and 5 per cent off list
Stove bolts in packages.....70 and 10 per cent off list
Stove bolts in bulk.....70, 10 and 2½ per cent off list
Tire bolts .....55 and 10 per cent off list
Track bolts .....6c. base
One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs 25c. extra.
All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $52 to $70; chain rods, $75 to $80; screw rivet and bolt rods and other rods of that character, $65 to $70. Prices on high carbon rods are irregular. They range from $75 to $100, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, ½ to 9/16 in. and larger, $4 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ⅝-in. and 7/16-in., $4.25; 5/16-in., $5; track bolts, $4.90 to $5. Boat and barge spikes, $4.50 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, $3 to $4 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb. $13.80 per package; 8-lb. coating, I. C., $14.10; 12-lb. coating, I. C., $15.80; 15-lb. coating, I. C., $16.80; 20-lb. coating, I. C., $18.05; 25-lb. coating, I. C., $19.30; 30-lb. coating, I. C., $20.30; 35-lb. coating, I. C., $21.30; 40-lb. coating, I. C., $22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. to 4c. from mill. Common bar iron, 4.50c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, discounts on steel pipe applying as from Jan. 14, 1920, and on iron pipe from Jan. 7, 1920:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜	47	20½	⅛ and ¼	1	+25
½	51	36½	⅜	25½	+ 1½
¾ to 3	54	41½	½	29½	11½
			¾ to 1½	34½	18½
			2 and 2½	33½	17½

Lap Weld

2	47	34½	1¼	24½	9½
2½ to 6	50	37½	1½	31½	17½
7 to 12	47	33½	2	28½	14½
13 and 14	37½		2½ to 6	30½	17½
15	35		7 to 12	27½	14½

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	43	25½	¼	+7	+40
½	48	35½	⅜	23½	6½
¾ to 1½	52	39½	½	28½	15½
2 to 3	53	40½	¾ to 1½	34½	19½
			2 and 2½	34½	19½

Lap Weld, extra strong, plain ends

2	45	33½	1½	27½	13½
2½ to 4	48	36½	2	29½	16½
4½ to 6	47	35½	2½ to 4	31½	19½
7 to 8	43	29½	4½ to 6	30½	18½
9 to 12	38	24½	7 to 8	22½	10½
1¼	21½	6½	9 to 12	17½	5½

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
3½ to 4½ in.	40½	1¾ and 1⅞ in.	+20
2½ to 3¼ in.	30½	2 and 2¼ in.	+10
2¼ in.	24	2½ and 2¾ in.	+ 1
1¾ to 2 in.	19½	3 and 3¼ in.	— 1½
		3½, 4 and 4½ in.	— 8

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton		Per Net Ton	
1 in.	$327	1¾ in.	$207
1¼ in.	267	2 to 2½ in.	177
1⅜ in.	257	2¾ to 3¾ in.	167
1½ in.	207	4 in.	187
		4½ to 5 in.	207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiations.

Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For reasonably prompt delivery, mills have no trouble in getting prices quoted in the right-hand column, or even higher prices.

Blue Annealed—Bessemer

	Cents per lb.
No. 8 and heavier	3.50 to 5.95
Nos. 9 and 10 (base)	3.55 to 6.00
Nos. 11 and 12	3.60 to 6.05
Nos. 13 and 14	3.65 to 6.10
Nos. 15 and 16	3.75 to 6.20

Box Annealed, One Pass Cold Rolled—Bessemer

Nos. 17 to 21	4.15 to 6.30
Nos. 22 to 24	4.20 to 6.35
Nos. 25 and 26	4.25 to 6.40
No. 27	4.30 to 6.45
No. 28 (base)	4.35 to 6.50
No. 29	4.45 to 6.60
No. 30	4.55 to 6.70

Galvanized Black Sheet Gage—Bessemer

Nos. 10 and 11	4.70 to 7.50
Nos. 12 to 14	4.80 to 7.60
Nos. 15 and 16	4.95 to 7.75
Nos. 17 to 21	5.10 to 7.90
Nos. 22 to 24	5.25 to 8.05
Nos. 25 and 26	5.40 to 8.20
No. 27	5.55 to 8.35
No. 28 (base)	5.70 to 8.50
No. 29	5.95 to 8.75
No. 30	6.20 to 9.00

Tin-Mill Black Plate—Bessemer

Nos. 15 and 16	4.15 to 6.15
Nos. 17 to 21	4.20 to 6.20
Nos. 22 to 24	4.25 to 6.25
Nos. 25 to 27	4.30 to 6.30
No. 28 (base)	4.35 to 6.35
No. 29	4.40 to 6.40
No. 30	4.40 to 6.40
Nos. 30½ and 31	4.45 to 6.45

PERSONAL

Paul J. Driscoll has been appointed general manager of sales of the Tacony Steel Co. and assistant general manager of sales of the Penn Seaboard Steel Corporation, Franklin Trust Building, Philadelphia, effective May 10. For a year or more, he has been in charge of the New York office of the Tacony Steel Co. as district sales representative. Prior to that time, he was assistant district sales manager for the Lackawanna Steel Co. in Philadelphia. His earlier experience in the steel business was with the sales department of the Carnegie Steel Co. in Philadelphia, with which he was connected from 1905 to 1911. Mr. Driscoll will be succeeded as district sales representative in New York by L. G. W. Carpenter, who for the past five years has represented the Alan Wood Iron & Steel Co., Philadelphia, in the New York territory.

PAUL J. DRISCOLL

Robert H. Watson has resigned as general superintendent of the blast furnaces of the Detroit Iron & Steel Co., Detroit, Mich., and has become superintendent of the new blast furnaces of the Ford Motor Co., Detroit. He has been succeeded by Alex P. McClure, who has been assistant superintendent of the Detroit Iron & Steel Co. furnaces.

Charles D. Steenburgh, purchasing agent North East Electric Co., Rochester, N. Y., for the past eight and a half years, has resigned to accept a similar position with the Rochester Can Co., same city, about May 15.

James A. Braden, advertising manager Standard Parts Co., Cleveland, severed his connection with that company May 1 to devote his time to personal interests. Ralph W. Leavenworth, for nearly two years assistant advertising manager, became chief of the department. Mr. Braden hopes to continue his eligibility for membership in the Old Timers' Club which he originated under Standard Parts sponsorship the past winter, by reason of being an executive of the H. B. Bixler Co., a tire and rubber manufacturers' engineering corporation of Akron, which has recently become a considerable factor in the tire industry.

The Jefferson Forge Products Co., Detroit, announces the appointment of Charles H. Brennan as sales manager.

J. N. Lapointe, president J. N. Lapointe Co., New London, Conn., machinery, has been elected president of the Arnold Electric Tool Co., West Haven, Conn., succeeding Frederick Levere, resigned. Mr. Lapointe has long been identified with the manufacture of broaching machines.

Charles B. Cushwa, since October, 1918, general superintendent of finishing mills of the Brier Hill Steel Co., Youngstown, Ohio, has been advanced to general manager, succeeding W. H. Warren, resigned. The change became effective May 1. For 17 years Mr. Cushwa was general superintendent of the Youngstown Iron & Steel Co., continuing in this capacity when its properties were acquired by the Sharon Steel Hoop Co. Mr. Warren has been with the Brier Hill company six years, during which he was general manager about four and one-half years, succeeding R. C. Steese in that capacity. He served various plants of the United States Steel Corporation for 25 years, going to Youngstown from Gary, Ind.

A. G. Norris has been appointed district manager for western New England, with headquarters at New Haven, Conn., for the S K F Industries, Inc., 165 Broadway, New York, sales distributors for the S K F and Hess-Bright ball bearings and Atlas steel balls.

Commander James Reed, Construction Corps, U. S. Navy, has resigned from the naval service and accepted the position of assistant general manager of the Los Angeles Shipbuilding & Dry Dock Company, San Pedro, Cal.

C. J. Steen, chief engineer Tacony Steel Co., Philadelphia, has been appointed chief engineer of the Penn Seaboard Steel Corporation, Philadelphia. He will have supervision of all engineering and designing of the Penn Seaboard and Tacony plants. As chief engineer of the Tacony Ordnance Corporation, Mr. Steen laid out much of the open-hearth steel-making, forging and heat treating plant which the corporation built during the war. Following the completion of government contracts and the purchase of the Tacony Ordnance plant by the Tacony Steel Co., Mr. Steen was made chief engineer of the consolidated organizations. His new appointment gives him a much broader field in the New Castle, Chester, Tacony and New Haven works of the Penn Seaboard Steel Corporation. H. W. Fielden, auditor Penn Seaboard Steel Corporation, has been appointed comptroller of the Tacony Steel Co. C. F. Jemison, treasurer Penn Seaboard Steel Corporation, has been elected treasurer of the Tacony Steel Co.

A. V. Rigby has been appointed assistant general superintendent of the Sharon and Farrell works of the Carnegie Steel Co., effective May 1, and will be associated with General Superintendent A. L. Cromlish. He has been master mechanic at the North works at Farrell and will be succeeded by Harry Brindle, assistant master mechanic.

G. A. Ungar has been appointed general sales agent and consulting engineer of the Flexite division, Slocum, Avram & Slocum Laboratories, Inc., Newark, N. J. In order to devote himself entirely to the commercial development of Flexite universal joints and propeller shafts, which he designed, he severed his connections about a year ago with the S K F Industries, where he held the position of technical manager and chief engineer. The general Flexite sales offices and Mr. Ungar's headquarters are now located in the Woolworth Building, New York.

Philip C. Molter, superintendent department of industrial education National Metal Trades Association, Chicago, gave an illustrated talk on "Training in Industry by Intensive and Intentional Methods," and Prof. Philip C. Nash, director of engineering practice Co-operative School of Engineering, Northeastern College, talked on "The Relation of Co-operative Engineering with the Mechanical Industries," at the bimonthly meeting and dinner of the Boston branch, National Metal Trades Associates, May 5, at Youngs Hotel.

Clarence H. Howard, president Commonwealth Steel Co., St. Louis, sails for Europe this week.

The Standard Steel & Wire Co., 549 West Washington Boulevard, Chicago, the incorporation of which was announced in THE IRON AGE of April 15, has elected the following officers: President, Cleveland Morse; vice-president, Charles E. Coles; secretary-treasurer, Andrew E. Kuby. Mr. Morse recently resigned as vice-president and sold his interest in E. P. Bartlett & Co., Chicago, of which company he was one of the organizers. Mr. Coles was formerly with the Steel Sales Corporation, Chicago, as department manager, and Mr. Kuby was likewise with that company for a year or more as department manager and for 11 years previous to that time with the Illinois Steel Co., as Wisconsin representative.

John F. Symington, vice-president Bartlett-Hayward Co., Baltimore, has resigned and will become a member of Symington, Hoffman & Co., which conducts numerous industrial enterprises.

D. T. Haddock, for the past three years superintendent of the Farrell, Pa., plant of the American Steel & Tin Plate Co., has resigned after being in the employ of the corporation for 20 years. He was superintendent of the Demmler, Pa., works, going from there to the Farrell plant as assistant superintendent. He was then transferred to Morgantown, W. Va., as assistant superintendent, returning to Farrell as superintendent.

G. B. Collings and C. W. Blossom have retired as president and treasurer of the Grant-Lees Gear Co., Cleveland, and Richard Ferguson, formerly general manager, has been elected president.

W. S. Quigley, president Quigley Furnace Specialties Co., Inc., New York, is in Europe.

Howard T. Walsh, general sales manager Sullivan Machinery Co., Chicago, mining equipment, etc. has been made a director of the company and vice-president in charge of sales at Chicago.

Charles A. Reagan, who has been representing Briggs & Turvias, salvage and scrap metal brokers, in the Chicago and Milwaukee districts for the past year, has been transferred to the New York office of the company, 347 Madison Avenue.

L. W. Strong, formerly of the publicity department Westinghouse Air Brake Co., Pittsburgh, has been appointed director of research engineering of the Square D. Co., Detroit, manufacturer of safety switches, to succeed D. H. Colcord, resigned.

Charles H. Tavener, engineer Curtis Engineering Corporation, Garden City, N. Y., on May 5 addressed the Boston section, American Society of Mechanical Engineers, at the regular May meeting at the Engineers Club, Boston, on "Methods of Aeroplane Production and Possibilities in Future Commercial Aviation."

George P. Bard, president Petroleum Iron Works Co., Sharon, Pa., has been granted a leave of absence and will spend the summer with his family in Rockmere, Pa.

The American Cast Iron Pipe Co. recently appointed R. C. Polk, 613 Hoge Building, Seattle, to have charge of the northwestern territory, including Washington, Oregon, the panhandle of Idaho and British Columbia.

Joseph G. Butler, Jr., veteran steel manufacturer of the Mahoning Valley, has been elected a delegate to the Republican national convention from the 19th Congressional district. Mr. Butler is pledged to support Senator Warren G. Harding.

After ten years' service, Edward M. Milligan has resigned as assistant city engineer at Youngstown, Ohio, to become identified with the engineering department of the International Steel Tube Co., Cleveland.

H. B. Slate, who for many years has been identified with the general machine line in a selling capacity, and for the past several years with the sales department of the Frevert Machinery Co., New York, recently joined the sales force of Peter A. Frasse & Co., Inc., New York. H. F. Tucker, also formerly with the sales force of the Frevert Machinery Co., also recently became a member of the sales department of Peter A. Frasse & Co., Inc., New York. The latter company has purchased all the machinery, merchandise and good will of the Frevert Machinery Co.

The New Jersey Zinc Co., 160 Front Street, New York, has appointed Bushnell Bigelow, assistant general sales manager and Walter I. Hess, manager of eastern sales. Mr. Bigelow was manager of eastern sales and Mr. Hess has been assistant sales manager.

At a special meeting of the board of directors of the Hilo Varnish Corporation, Brooklyn, John H. Mills, dean of the sales organization, was elected a vice-president. This honor came as a climax to the dinner given recently by his fellow members of the board of directors to celebrate the thirty-sixth anniversary of his association with the company.

L. W. Haig has been appointed district sales manager of the Packard Electric Co., Warren, Ohio, at Buffalo. After graduating from Purdue University Mr. Haig became connected with several well-known electrical concerns, where he specialized on the design of transformers. He also had previous experience in testing.

At the annual meeting of the Independent Pneumatic Tool Co., Chicago, on April 23, the following were elected: Directors, Boetius H. Sullivan, John D. Hurley, Leonard S. Florsheim, August Gatzert, James J. McCarthy, William A. Libkeman, Ralph S. Cooper, Robert T. Scott, Edward G. Gustafson, Fletcher W. Buchanan; officers, Boetius H. Sullivan, chairman of the board; John D. Hurley, president; Ralph S. Cooper, first vice-president; Robert T. Scott, second vice-president; Fletcher W. Buchanan, secretary; Edward G. Gustafson, treasurer. Boetius H. Sullivan is a son of the late Roger C. Sullivan, and was elected to fill the vacancy made by his father's death, on April 14. This was the only change in the board of directors. Robert T. Scott, the newly elected second vice-president, has been with the company for the past fifteen years. He has been manager of the New York office, and will continue to make his headquarters in that city.

E. Ellsworth McCormick has resigned as general storekeeper with the Mesta Machine Co., Pittsburgh, to accept the position of superintendent of the Herman Pneumatic Machine Co., Zelienople, Pa., effective May 1.

Laroy S. Starrett, president L. S. Starrett Co., Athol, Mass., tool maker and hack saws, who is in Florida, celebrated his eighty-fourth birthday by taking a ride in an airplane. Mr. Starrett does not expect to return to Athol much before June 1.

Ralph C. Rose has severed his connections with the Inland Steel Co., Milwaukee office, and is now a mill representative of various iron and steel products with offices in the First National Bank Building, Milwaukee.

The Charcoal Iron Co. of America has elected Fred T. Moran, Detroit, a director to succeed George J. Webster, Marquette, retired. The following were re-elected to the board: Frank W. Blair, John W. Mitchell, Edwin Lodge, A. A. Fowler, F. M. Harrison and Henry M. Campbell.

Whiting Williams has announced his resignation as director of personnel the Hydraulic Pressed Steel Co., Cleveland, and his acceptance of an offer to lecture in Europe on industrial conditions as he found them in his seven months as a worker in the iron and steel industries of the United States. While in Europe Mr. Williams will make a similar study of the causes of industrial and social unrest.

OBITUARY

OLIVER SHEPPARD PICHER, president Eagle-Picher Lead Co., Chicago, died of pneumonia at his home in Winnetka, Ill., on April 26. He was born at Springfield, Mo., but spent his boyhood and youth in California. He was a graduate of Leland Stanford University and Columbia Law School. He spent three years in the office of the Hon. Elihu Root, of New York. Later he went to Joplin, Mo., where his father, Judge O. H. Picher, was president of the Picher Lead Co., with the intention of practicing law there, but soon became interested in manufacturing and abandoned the law for business. In 1906 he became secretary of the Picher Lead Co., a position which he held for three years, until he was elected president to succeed his father, who had retired and gone to live in California. In 1916 the Eagle White Lead Co. and the Picher Lead Co. were merged into the Eagle-Picher Lead Co., and Mr. Picher became president of the consolidated companies, a position which he filled until his death. He was a director and chairman of the finance committee of the American Zinc Institute.

CHARLES W. JOHNSON, assistant director of engineering for the Westinghouse Electric & Mfg. Co., East Pittsburgh, died of double pneumonia on April 21, following an illness of only a few days. He was born June 30, 1874, and was graduated from Ohio State University in 1896. He entered the employ of the Steel Motor Co., Johnstown, Pa. Later he became superintendent of the Allis-Chalmers-Bullock Co., Cincinnati. He entered the employ of the Westinghouse Electric & Mfg. Co. in 1907, and was soon appointed

chief inspector. In 1912 he became general superintendent of the East Pittsburgh works, and in the early part of 1919 was made assistant manager of works. On Jan. 1 last he was appointed assistant director of engineering. Mr. Johnson was a member of the American Society of Mechanical Engineers, the American Institute of Mining Engineers and the Engineering Society of Western Pennsylvania.

ERNEST VAUGHN, aged 54, superintendent American Car & Foundry Co., Detroit, died April 24 at his residence in Detroit following a two years' illness with Bright's disease. He was born at Youngstown, Ohio, where he received his first experience in mill work at the Brown-Bonnell plant, now a part of the Republic Iron & Steel Co. He served the American Car & Foundry Co. in St. Louis, Canton and Detroit, at various times.

JOHN T. CRANSHAW, credit manager Brown & Sharpe Mfg. Co., Providence, R. I., for many years, died at his home in Providence, April 28, following an illness incurred during his usual winter trip to Florida. Mr. Cranshaw's connection with the Brown & Sharpe Mfg. Co., began in October, 1863, when he was 16 years of age.

JOSEPH HAWES WESSON, president Smith & Wesson Co., Springfield, Mass., fire arms, died April 30, at his home in that city after a brief illness. He was born in Springfield Sept. 27, 1859. Early in life he entered the shops as an apprentice machinist. In 1912 the orginal company was dissolved and a trust association formed, of which he was elected president, a position he held at the time of his death.

C. B. EDWARDS, a brother of the members of the Edwards Mfg. Co., Inc., Cincinnati, Ohio, sheet metal specialties, and president Moeschl-Edwards Corrugating Co., Covington, Ky., died at his home at Fort Thomas, Ky., on April 17, after a lingering illness. He was 53 years of age, and was widely known in the sheet metal circles.

FRANK ASBURY SHUTE, vice-president Nightingale & Childs Roofing Co., Boston, died recently at the Newton Hospital. He was born in Philadelphia, Feb. 15, 1877. He was a member of the Engineers' Club, Boston.

FREDERICK A. BENNETT, Bridgeport, Conn., died April 26, following an operation for appendicitis. Mr. Bennett recently resigned as secretary, Bridgeport Manufacturers' Association, a position he held for 20 years, to enter the manufacturing field.

Orders for Equipment of Algoma Structural Steel Plant

For the equipment for the new structural steel plant extension for the Algoma Steel Corporation, Sault Ste. Marie, Ont., which will cost about $7,000,000, the following contracts have been placed: 28-in. finishing mills with hot beds and tables, Morgan Engineering Co., Alliance, Ohio; 40-in. blooming mill and 35-in. intermediate blooming mill, Mesta Machine Co., Pittsburgh; main mill motor drives and d. c. motor equipment, Canadian Westinghouse Co., Hamilton, Ont.; a. c. motor equipment, Canadian General Electric Co., 212 King Street West, Toronto, Ont.; structural work, Hamilton Bridge Works, Bay North, Hamilton, Ont.; Dominion Bridge Co., Lachine, Que., and McGregor & McIntyre, Ltd., 1139 Shaw Street, Toronto, Ont.; cranes, Dominion Bridge Co., Dominion Station, Lachine, Que., Morgan Engineering Co., Alliance, Ohio; re-heating furnaces and soaking pits, Alexander McLaughlin Co., Pittsburgh.

A number of Cincinnati machine tool manufacturers, as well as manufacturers of other lines of goods, are preparing exhibits for the Exposition of United States Manufacturers, to be held in Buenos Aires, Argentina, beginning on Nov. 15 and continuing for 30 days. The purpose of the exposition is to stimulate the sales of American manufactures.

War Department Abandons Metric System

WASHINGTON, May 4.—Use of the metric system which was adopted to a certain extent by the War Department during the war has been ordered discontinued by Secretary of War Baker, except for medical and scientific purposes. Secretary Baker's order follows:

As an incident to the world war, metric units of weight and measures were necessarily used in instruction and training. As a result, more or less confusion now exists as to what units should be used normally. Hereafter the customary former units of weight and measure (including the degree Fahrenheit) will, as far as practicable, be used throughout the army as they were before the war.

Material and equipment now graduated in metric units will, when worn out, be replaced by articles graduated in British units in such manner as will cause all parts of a regiment or similar organization (or smaller organization when there is no regimental organization) to be provided at all times with material and equipment graduated alike.

This order shall not be construed to prevent the utilization of metric units of weight and measure when desirable in connection with specifications and contracts, medical and scientific supplies, scientific research and developments, international meteorology, foreign maps, monographs and handbooks and similar subjects.

Carbon Steel Co. Shows Loss

The Carbon Steel Co., Pittsburgh, has issued a report of its financial operations for the six months ended March 31 last. It shows a loss from operations, Oct. 1 to March 31, of $131,435.45. The surplus, March 31, was $3,646,943.02. Charles McKnight, president, in his report to the stockholders, said in part:

During the last six months, conditions imposed on all steel companies have been very severe. In September, 1919, the steel workers' strike started, and lasted for several weeks, which made it necessary to temporarily suspend operations. Following this the coal miners' strike in November also caused a very heavy loss in your company's business. In the following three months unusually severe weather resulted in freight embargoes, shortage of fuel, etc., which seriously handicapped operations, and consequently your company suffered a loss during the six months aggregating $131,435.45. During the latter part of the period your company began to show a profit. However, the railroad employees' strike, which is now in effect, has again rendered operations impossible, as freight cannot be moved in or out of the plant, and it is difficult to predict how long these conditions will continue. Your directors hope that the results for the last half of the fiscal year will be more favorable than for the period just ended.

Installing New Equipment

The New England Coal & Coke Co., Everett, Mass., have just placed an order for an improved coal pulverizing plant to be installed in July. The minimum capacity of the plant is 200 tons per hour and the maximum 600 tons. The new equipment will be installed immediately behind the present plant recently installed, which already has become inadequate for the company's needs. The company is installing new grizzly screens for foundry coke in the recently constructed screening plant. The teeth of the present screen are 1½ in. apart, while those in the new screen will be 2¾ in. apart, which will provide the taking of everything under furnace size coke.

Of the company's 400 ovens, 315 are in operation, the number having recently been increased from 280. Battery No. 5 is undergoing repairs.

The Stewart Auto Trailer Co. will shortly begin construction of a plant in Youngstown, Ohio, to manufacture trailers to be used in connection with motor trucks. The company is capitalized at $50,000. Among the incorporators are J. J. McAleese, Youngstown, and W. D. Stewart of Sharon, Pa.

Machinery Markets and News of the Works

RAILROAD INQUIRIES

Several Roads Have Issued Lists in the Past Week

Norfolk & Western Has Asked for Quotations on More Than 70 Items

Prospects for railroad buying of machine tools and allied equipment are better than at any time since the roads were returned to private operation on March 1. Several railroads have issued inquiries during the past week, and other lists are in the making. The largest inquiry now out comes from the Norfolk & Western, its purchasing department at Roanoke, Va., asking for quotations on about 75 machines for machine shop, forge shop and foundry. The New York, Ontario & Western has issued an inquiry for several tools at New York. At Chicago the St. Louis-San Francisco railroad wants about 22 tools and the Chicago, Rock Island & Pacific five machines. The Hocking Valley Railroad has issued a small list, and the Louisville & Nashville is buying at Cincinnati and elsewhere. The Pennsylvania Railroad has issued a revised list for its Columbus, Ohio, shops, for which some equipment has already been purchased.

Several new railroad lists are expected in the near future. The Erie Railroad is reported to have requirements totaling about $600,000. An appropriation of $1,500,000 is now being considered, and a part of this will be used for a new car shop. The New York Central, Chesapeake & Ohio and the Delaware, Lackawanna & Western are reported to be making up lists, which will be out soon.

A large list has been issued by the Lord Construction Co., New York, for a dry dock and ship repair plant in New Jersey. About 40 machines are called for.

One of the developments of the past week was a strike of about 4000 machinists in the Cincinnati district. The men are demanding an advance in wages of about 25 per cent. The effect of the strike will be to make deliveries from that district more uncertain.

April business in machine tools was very satisfactory. A Chicago dealer reports it as having been about two-thirds of the previous month. The machine-tool trade had recognized that the phenomenal business of the first quarter could not be maintained. The volume of business in April is quite remarkable in view of the disturbances caused by the railroad strikes.

Transportation troubles are being slowly overcome. Last week one Eastern machine-tool plant had 60 machines on its floor ready for shipment, but could not get cars. Another Eastern plant shipped out a month's production, about 125 tools, in three days by motor truck. The tools were taken to points where the congestion was not so serious and placed on cars. Many tools have been shipped from New England plants by motor truck in the past week, the buyers showing a willingness to pay large transportation charges rather than depend upon uncertain railroad service.

New York

NEW YORK, May 4.

The purchasing department of the Norfolk & Western Railroad at Roanoke, Va., has issued what is perhaps the largest single railroad inquiry since the roads were returned to private operation on March 1. The list includes forge shop and foundry equipment as well as machine tools, there being about 75 items, as follows:

Four 36 in. x 36 in. x 8 ft. planers.
Two 36 in. x 36 in. x 12 ft. planers.
One 36 in. x 48 in. x 12 ft. planer.
Three 24 in. engine lathes.
Two 36 in. engine lathes.
Three 18 in. engine lathes.
Four 20 in. engine lathes.
Two 16 in. engine lathes.
Two 25 in. heavy duty engine lathes.
Two 32 in. crank shapers.
One 24 in. crank shaper.
Two 2½ in. double-head bolt cutters.
One 2 in. double-head bolt cutter.
One 2½ in. single-head bolt cutter.
Two 42 in. vertical boring mills.
One 48 in. car-wheel boring machine.
One 36 in. vertical turret lathe.
One double-head staybolt threading machine.
One valve seat facing machine.
One dust guard machine.
One portable crank truing machine.
Two 48 in. car-wheel lathes.
One 42 in. car-wheel lathe.
One 90 in. driving-wheel lathe.
One 60 in. vertical boring mill.
Two emery wheel stands.
One piston rod grinding machine.
One surface grinding machine.
Two plain external grinding machines.
Two No. 4 universal milling machines.
One 8 in. pipe cutting machine.
One pipe threading machine.
One pipe machine.
One 36 in. band saw.
One 48 in. horizontal boring, drilling and milling machine.
One driving-box boring machine.
Two combination punches and shears.
One alligator shear.
One portable crank pin truing lathe.
One hand bending roll for 3/16 in. plates.
One coil forming machine.
One 600-ton car-wheel press.
One 750 ft. air compressor.
One forge blower.
Two 500 ft. air compressor.
One 1100 lb. steam hammer.
One 1600 lb. steam hammer.

FOUNDRY EQUIPMENT

Two 36 x 36 in. jolt machines.
One 18 x 20 in. jolt machine.
One 18 x 18 in. core jolt machine.
One 14 x 14 in. core jolt machine.
One 5 ft. sand mixing machine.

The Lord Construction Co., 105 West Fortieth Street, New York, has issued a revised list of tools required for an affiliated interest, which will build a dry dock and ship repair plant in New Jersey. The list follows:

Two 14 in. lathes.
One 17 in. lathe.
Two 21 in. lathes.
One 25 in. lathe.
One 25 in. x 10 ft. heavy duty combination turret lathe.
Five 18 in. double-wheel Ransom grinders.
One 16 in. heavy duty shaper.
One 24 in. heavy duty shaper.
One 16 x 16 in., one spindle Pierle sensitive drill, or equivalent.
One 20 in. Aurora drill, stationary head.
One 24 in. Aurora drill, sliding head.
One 32 in. Aurora drill, sliding head.
One No. 3 Robertson hack saw.

One No. 4 G. H. Le Blond universal heavy duty milling machine.

One 6 ft. full universal type radial drill, Niles.
One 4 ft., same type, Niles.
One No. 6 keyseater, Niles.
One 2 in. single-head bolt cutter.
One ¼ in. x 3 in. pipe threading machine.
One 2½ x 8 in. pipe threading machine.
One 84 in. vertical boring and turning mill.
One 80 in. horizontal boring, drilling and milling machine.
One 800 lb. steam hammer.
One 32 in., 1 in. capacity, bending roll.
Four 48 in. throat plate punches.
One punch, 10 in. throat.
One No. 4 double angle shear.
One 13 ft. wall radial drill.
One 30 in. single cylinder surface planer.
One 24 in. pattern maker's lathe.
One 40 in. band saw.

Business the past week has been very good considering the continued handicap to industry due to the demoralized railroad service. The Automatic Straight Airbrake Co., which will have a plant in New York, continues to buy from the office of George W. Goethals & Co., 40 Wall Street. The Mergenthaler Linotype Co. has taken no action at this writing on its recent list.

Railroad buying begins to loom up as a very promising prospect. In addition to the list of the Norfolk & Western, already referred to, there is an inquiry for several machines from the New York, Ontario & Western. It is reported in the trade that the Erie Railroad is considering an appropriation of $1,500,000, part of which, if it becomes available, will be used for a new car shop at Susquehanna, N. Y. About $600,000, it is reported, will be expended for machine tools and allied equipment. The New York Central; Delaware, Lackawanna & Western and the Chesapeake & Ohio are all reported to be compiling lists, which probably will be issued soon. The purchasing office of the latter road is at Richmond, Va. The Baltimore & Ohio has recently bought a number of plate-working machines, including a bending roll.

Price advances continue. Some of the manufacturers of sensitive drills have put up prices about 15 per cent. An Ohio manufacturer of lathes has advanced prices from 10 to 15 per cent.

Export business is not very active, but there are prospects of better buying of production tools for British automobile plants. A representative of one of the large British automobile manufacturers is now making a tour of the American plants preparatory to installing new systems in that plant. A British machine-tool company, with buying office in New York, reports a good demand from England for multiple spindle drills and milling machines.

Inquiries for cranes are fairly numerous, but sales are not brisk. The shortage of small motors is still felt, manufacturers being from six to eight months behind on orders. The Metal & Thermit Corporation, Chrome, N. J., is in the market for a 15-ton locomotive crane. The four second-hand, 20-ton locomotive cranes inquired for by Stone & Webster for the American Sugar Refining Co. contract have been purchased from the Government.

Recent sales include: The Bedford Foundry & Machine Co., three 25-ton overhead traveling cranes to the J. G. White Engineering Co. for the Solvay Process Co., Syracuse, N. Y.; the Browning Co., two 15-ton locomotive cranes to the Municipal Government, Richmond, Va.; the Milwaukee Electric Crane & Mfg. Co., two 5-ton, 56-ft. span overhead traveling cranes to the Newburgh Shipbuilding Co., Newburgh, N. Y.; the Shepard Electric Crane & Hoist Co., two 1½-ton, 44-ft. 9-in. span and 46-ft. 10-in. span overhead traveling cranes to the Castanea Paper Co., 200 Fifth Avenue, New York; to the Buick Motor Co., Flint, Mich., a 3-ton, 19-ft. span overhead traveling crane; to the Kennedy Valve Mfg. Co., Elmira, N. Y., a 5-ton, 70-ft. span, overhead traveling crane; to the American Car & Foundry Co., Buffalo, a 10-ton, 75-ft. span and a 5-ton, 55-ft. span overhead traveling cranes; to the Anderson Foundry & Machine Co., Anderson, Ind., a 3-ton, 50-ft. span overhead traveling crane; to the Kendallville Foundry Co., Kendallville, Ind., a 3-ton, 28-ft. span overhead traveling crane, to the Hayward Fire & Equipment Co., Indianapolis, Ind., a 5-ton, 39-ft. 2-in. span overhead traveling crane, and to the Bessemer Gas & Engine Co., Grove City, Pa., a 5-ton, 21-ft. 3-in. span overhead traveling crane.

The Empire City Iron Works, 898 Eighth Avenue, New York, has leased a building now in course of erection by the Hefmans Realty Co., on Tenth Street, near East Avenue, Long Island City, for a new foundry.

The Cosmopolitan Iron Works Brooklyn, have been incorporated with an active capital stock of $52 000 by A. L. Smith, R. H. Fitusch and T. Eckert, 5 Broadway, to manufacture iron and steel products.

The Ever Ready Auto Lock Corporation, New York, has been incorporated with a capital stock of $50,000 by P. Crichton, J. Carpenter and G. A. Crump, 672 East 219th Street, to manufacture special locks and locking devices.

The Monroe Calculating Machine Co., 233 Broadway, New York, maufacturer of tabulating machines and devices, has increased its capital stock from $600,000 to $2,500,000.

The Hudson Wire Co., Ossining, N. Y., is having plans prepared for a one-story addition, 80 x 180 ft., to cost about $35,000.

The K.E.M. Co., Brooklyn, has been incorporated with a capital stock of $50,000 by J. A. Kulier, O. Erickson and A. E. Latham, 52 Lincoln Place, to manufacture motors and other electrical specialties.

The Clearwater Package Machinery Co., Kingston, N. Y., has been organized by S. Mandell, T. Siegel and R. A. Bullock, 65 Broadway, New York, to manufacture special machinery.

The Interborough Structural Iron Co., 1627 Union Street, Brooklyn, has filed plans for a one-story building, 100 x 140 ft., on Sullivan Street, near Bradford Avenue, to cost about $65,000.

The Spring Products Corporation, New York, has been incorporated with a capital stock of $20,000 by S. and A. Krakauer, and F. Marcus, 1780 Marmion Avenue, Bronx, to manufacture steel springs and other wire products.

The Beebe Island Utilities Co., Watertown, N. Y., has completed plans for its proposed new hydro-electric power plant, to cost about $1,000,000, including equipment.

The Doehler Die Casting Co., Court and Ninth streets, Brooklyn, manufacturer of die-castings, brass and bronze alloy castings, etc., has arranged for a bond issue of $1,000,000. It is now operating two plants in addition to its Brooklyn works, at Toledo, Ohio, and Chicago, with total floor area aggregating 350,000 sq. ft. Employment is given to 2300. H. H. Doehler is president.

The Fireproof Products Co., Inc., 257 East 133rd Street, New York, has acquired the plant and business of the Triumph Column Co.

The Baker-Perkins Mfg. Corporation, White Plains, N. Y., has been incorporated with a capital stock of $850,000 by S. B. Howard and A. R. Myers, 65 Cedar Street, New York, to manufacture stoves, ovens and similar equipment.

The Sterling Die Casting Co., Inc., 743 Thirty-ninth Street, Brooklyn, has increased its capital stock from $120,000 to $180,000.

The International Railways of Central America, 17 Battery Place, New York, is planning for the purchase of a number of machine tools for shops on its lines.

The Federal Metal Spinning Co., Brooklyn, has been organized by J. D. Raznin and I. Salesky, 156 South First Street, to manufacture metal specialties.

The Electric Welding Co. of America, 764 Court Street, Brooklyn, manufacturer of welding products, has been incorporated under Delaware laws with capital stock of $2,390,000.

The combustion Engineering Corporation, 11 Broadway, New York, has acquired property at 43-47 Broad Street, and will soon commence the erection of an eight-story building.

The Brooks-Ostruk Co., 225 West Sixty-sixth Street, New York, manufacturer of automobile bodies, has increased its capital stock from $150,000 to $1,000,000.

The Insecticide Caster Co., New York, has been incorporated with a capital stock of $50,000 by R. C. McDonald, G. M. Kennoch and E. Chalupa, 532 East Eighteenth Street, to manufacture casters, guards and other metal specialties.

The Burrows Metal Mfg. Co., 521 West Twenty-third Street, New York, has leased about 8,000 sq. ft. at 572 Greenwich Street for a new establishment.

The Jordan Motor Car Co., of New York, has been incorporated with a capital stock of $167,500 by R. B. Knowles, O. A. Hack, and A. Meiklejohn, 400 West 153rd Street, to manufacture automobiles.

The Renew Electric Lamp Corporation, New York, has been incorporated with a capital stock of $100,000 by M. V. Ryan, C. M. Stuart, Jr., and J. R. Moynihan, 408 West 150th Street, to manufacture electric lighting equipment.

The De Laval Separator Co., 165 Broadway, New York, manufacturer of cream sperators, filters, etc., with plant at Poughkeepsie, N. Y., has increased its capital stock to $5,000,000.

The Kny-Scheerer Corporation, 404 West Twenty-seventh Street, New York, manufacturer of surgical instruments, has arranged for a stock issue of $800,000. It was recently incorporated with an active capital stock of $1,000,000.

The Higdon Elevator Co., New York, has purchased the three-story building, 18 x 75 ft., at 53 Wooster Street, for a new establishment. It will be improved and remodeled to accommodate the new business.

The New Jersey Zinc Co., 160 Front Street, New York, is planning for an increase in its capital stock from $25,000,000 to $50,000,000. It operates a large plant at Palmerton, Pa.

The United Electric Sales Corporation, Sedgewick, N. Y., has been incorporated in Delaware with capital stock of $25,000 by Robert A. Cumming, Bronxville; Royal F. Shepard, and Robert N. Chambers, Sedgewick, to manufacture electric welding products.

The J. W. Richardson Foundry & Metals Corporation, 1066 Sixty-second Street, Brooklyn, has increased its capital stock to $30,000.

The Swedish Gage Co., 245 West Fifty-fifth Street, New York, has filed notice of dissolution.

The Metal Finishers Supply Co., New York, has been incorporated with a capital stock of $20,000 by G. W. Levett, G. W. Kyle and O. B. Hebert, 489 Broome Street, to manufacture metal-workers' equipment.

The Long Island Repair & Supply Co., Brooklyn, has been incorporated with a capital stock of $20,000 by F. Schippers, H. and F. C. Kramer, 3819 Avenue A, to manufacture automobile parts and operate a general repair works.

The B. F. Goodrich Co., 1780 Broadway, New York, manufacturer of automobile tires and rubber products, with plant at Akron, Ohio, has arranged for a note isue of $30,000,000. B. G. Work is president.

Property of the Chillingworth Mfg. Co., 245 West Side Avenue, Jersey City, N. J., manufacturer of pressed steel gear cases, etc., will be sold by Francis P. Garvan, Alien Property Custodian.

The Cramer-Tillotson Co., Long Branch, N. J., has been incorporated with a capital stock of $100,000 by Alvin B. Cranmer, Ralph N. Cranmer, and Albert S. Tillotson, to manufacture hardware specialties.

The Globe Tool & Machine Co., Elizabeth, N. J., has been incorporated with a capital of $25,000 by Wenzel Nezbeda and Louis Franz, to manufacture machinery and tools.

Plans have been prepared by the Ordnance Department for remodeling the storage buildings at the Raritan Arsenal, Metuchen, N. J., into shop structures, to be equipped for automobile truck maintenance and repair instruction work. The constructing quartermaster, Raritan Arsenal, with office at the Temporary Motor Storage, South Amboy, N. J., is in charge.

The Otis Elevator Co., Eleventh Avenue and Twenty-sixth Street, New York, has increased its capital stock from $16,500,000 to $21,500,000.

The Manhattan Rubber Mfg. Co., Willett Street, Passaic, N. J., manufacturer of mechanical rubber goods, has broken ground for the erection of a new plant at Montville on the Whippany River, near Morristown, N. J., estimated to cost about $300,000.

The Richard Staack Lead Coating Works, 84 Cambridge Avenue, Jersey City, N. J., has been incorporated with a capital stock of $250,000 by P. D. Benson, A. E. Claffer and W. W. Reeves, to manufacture special machinery for lead coating application.

The American Sanitary Works, Washington, N. J., manufacturer of plumbers' tanks and kindred products, is arranging for the installation of new machinery.

In connection with the operation of its new works at Bloomfield, N. J., now in course of construction, the American-La France Fire Engine Co., Elmira, N. Y., will enter the commercial truck field, and will use this plant for truck and parts manufacture. It has a tract of 23 acres and the first unit, estimated to cost about $100,000, will be supplemented by other buildings. It is expected to have the plant ready for operation during the summer.

The International Edge-Tool Co., 810 Broad Street, Newark, N. J., has been incorporated with a capital of $100,000 by Quirine Beltram and Charles Maffei, to manufacture cutting tools, etc.

The Economy Machine Co., Newark, is having plans prepared by Architect W. E. Lehman, 738 Broad Street, for a two-story plant at Badger and Runyon streets, 86 x 110 ft., to cost about $50,000.

The Isbell-Porter Co., 46 Bridge Street, Newark, manufacturer of gas works machinery, has increased its capital stock from $175,000 to $400,000.

The Central Pattern Works, 10 Ardsley Court, Newark, has been incorporated with a capital of $125,000 by A. F. Blasius, Joseph Darche and Frederick W. Flinsbach, to manufacture mechanical patterns.

The Natural Carbonic Gas Co., McClelland Street, Newark, has completed plans for a new power plant to cost about $30,000.

Officials of the Public Service Electric Co., Public Service Terminal, Newark, are perfecting plans for the organization of a new company to be known as the North Jersey Power Co., with authorized capital stock of $25,000,000. It will be operated in conjunction with the present corporation, and is designed for the primary purpose of serving industrial interests. It contemplates building a large power plant in the vicinity of Newark, with initial generating capacity of 100,000 k.v.a., and with ultimate output of twice this amount. The first unit is estimated to cost about $12,500,000, and it is proposed to develop the project so that contracts for machinery may be placed in about 60 days. It is expected to have the plant ready for service in about 18 months. Two sites are now being considered, one at the rear of the present Essex power station, Point-No-Point, in the meadow district, and the other in the vicinity of the Passaic wharf. Thomas N. McCarter is president and N. A. Carle is electrical engineer.

The Universal Tobacco Machine Co., 98 Murray Street, Newark, manufacturer of tobacco stripping and booking machinery, has had revised plans prepared for its new plant at Mount Pleasant Avenue and Gouverneur Street. The structure will be two-stories, instead of one-story, as initially planned, 100 x 200 ft., and is estimated to cost about $150,000.

Phineas Jones & Co., 305 Market Street, Newark, manufacturer of automobile wheels, bodies, etc., has increased its capital stock from $100,000 to $500,000.

The Goodwin Automobile Co., 228 Central Avenue, Newark, N. J., has leased the entire building at 48 Orange Street, for the establishment of a service and repair works.

Baker & Co., Inc., 54 Austin Street, Newark, manufacturer of platinum wire, etc., has filed plans for a two-story shop, 38 x 50 ft., at 125-27 Astor Place, to cost about $36,600.

A one-story power plant, 50 x 100 ft., to cost about $25,000, will be erected by John Campbell & Co., Newark, at their chemical works at Avenue L and Plum Point Lane, in connection with the construction of an addition to cost $108,000.

Arthur Rehberger & Son, Inc., 316 Ferry Street, Newark, has been incorporated with a capital of $250,000 to manufacture automobile trucks, parts, etc. Arthur and Edward A. Rehberger are the incorporators.

The Nelson Tool & Machine Co., 253 Norfolk Street, Newark, N. J., will build a new plant in Bloomfield, into which it will move in the early fall.

The Industrial Wire & Metal Works, High Street, Newark, is contemplating the erection of a new plant.

Philadelphia

PHILADELPHIA, May 3.

With the exception of the list issued by the Norfolk & Western Railroad, published in the New York market, there is very little inquiry or buying. Several tool representatives claim that April has been the poorest month from the standpoint of volume of sales this year. Added to the seriousness of railroad embargoes were the threatened uprisings of labor the first of this month, the scarcity of money for floating new enterprises, the expectancy that prices are bound to come down and the general unsettled conditions. A seller of cranes states there is an abundance of his line left over from the war which is still idle. He comments on the delay in converting many war industries to peace time pursuits.

Among recent inquiries are those of the Cornwall & Lebanon Railroad, owned by the Bethlehem Steel Corporation, for a few tools for the new machine shops at West Lebanon, Pa.; the Bethlehem Steel Co. for a shaper and a keyseater; the Chester Shipbuilding Co. for a large shear and the Tioga Steel & Iron Co., Philadelphia, which will make gears and will need grinders.

The Vim Motor Truck Co., Twenty-third and Market streets, Philadelphia, has acquired through the War Department the former gun plant of the Midvale Steel & Ordnance Co., at Wayne Junction, for the manufacture of motor trucks. The site comprises about 25 acres. The buildings will be remodeled. E. E. Smith is president.

The William Cramp & Sons Ship & Engine Building Co., Richmond and Norris streets, Philadelphia, will increase its capital by $15,000,000.

The Premier Motor Corporation of America, 801 Pennsylvania Building, Philadelphia, plans to lease or buy a local plant for the manufacture of a four-cycle, marine type engine and a two-cycle motor. Timothy O'Leary is president.

The Standard Crown Co., Hope and Palmer streets, Philadelphia manufacturer of metal bottle seals, is having plans prepared for a two-story brick addition, 64 x 210 ft. It recently completed arrangements for a one-story extension, 62 x 200 ft., to cost about $35,000.

Proposals will soon be asked by the Emergency Fleet Corporation, Philadelphia, for the sale of the Hog Island Shipyard.

The Rumsey Electric Co., 1231 Arch street, Philadelphia, is planning to remove its plant to a five-story building at 1007 Arch street for increased operations. Alterations are being made to accommodate the new business.

The H. W. Butterworth & Sons Co., 2417 East York street, Philadelphia, manufacturer of machinery and parts, has filed plans for extensions and improvements in its plant to cost about $40,000.

The Hall Planetary Thread Milling Machine Co., Philadelphia, manufacturer of machine tools, etc., has taken title to the property at 4821 Garden street, comprising a site 92 ft. by an irregular depth, improved with a one-story machine shop.

In the appropriations bill now being completed by the House Committee, Washington, D. C., provisions are made for appropriations for the Frankford Arsenal, covering $270,000 for an electric power plant for works service, and $88,000 for the installation of an electric transmission system at the property.

The Manchester Tool & Machine Co., Philadelphia, has taken title to the property at Eleventh and Cambria streets, 198 x 200 ft., secured from Howard A. Loeb. It is improved with a two-story building and two smaller structures.

The Mineral Vault & Casket Co., Philadelphia, has filed plans for a two-story building at 5632 Summer street, to cost about $40,000, with equipment.

The Commercial Truck Co. of America, Twenty-seventh and Brown streets, Philadelphia, manufacturer of automobile trucks has awarded contract to the W. L. Steele & Sons Co., 40 North Sixteenth street, for a new plant at Hunting Park avenue and Rising Sun Lane.

The Philadelphia Electric Co., Tenth and Chestnut streets, Philadelphia, is arranging for the immediate construction of a new plant at 52 North Sixth street, to cost about $300,000. A one-story brick addition will also be erected to the plant at Marshall and Noble streets, to cost about $125,000.

The Harrison Safety Boiler Works, Seventeenth street, near Allegheny avenue, Philadelphia, has filed plans for a one-story addition on Lippincott street, near Seventeenth street, to cost about $35,000.

The Holmes-Hilton Co., 23 Chancery street, Trenton, N. J., has been incorporated for $50,000 by Frank Holmes, Jr., Ernest and Samuel Hilton, to manufacture electric storage batteries.

The De Laval Steam Turbine Co., North Clinton street, Trenton, N. J., has increased its capital stock from $1,500,000 to $2,500,000.

W. G. Runkles, 61 South Hermitage avenue, Trenton, N. J., has filed plans for a one-story machine shop, 74 x 145 ft., on Oakland street, to cost about $10,000.

The McFarland Foundry & Machine Co., Meade and Breunig streets, Trenton, N. J., manufacturer of castings and special machinery, has awarded contract to the N. A. K. Bugbee Co., 256 Hanover street, for a one-story addition, 50 x 120 ft., to cost about $25,000.

The Victor Talking Machine Co., Camden, N. J., is having plans prepared for a large building at its plant at State, York Front and Pine streets, estimated to cost over $1,000,000.

The Traylor Engineering & Mfg. Co., Allentown, Pa., manufacturer of crushing machinery and other heavy equipment and parts, is having plans drawn for a one-story addition, 125 x 193 ft., at Broad and Lehigh streets.

The Bath Portland Cement Co., Finance Building, Philadelphia, is considering preliminary plans for its proposed plant on property recently acquired at Sandt's Eddy, Pa., estimated to cost over $1,000,000.

The Early Foundry Co., Cherry street, Dickson City, Pa., stoves and ranges, iron and steel castings, etc., is considering the erection of a new foundry, one-story, 90 x 200 ft., to cost about $150,000, including equipment.

The North Penn Washer Co., Hatfield, Pa., is planning for a one-story machine shop, 24 x 36 ft., at Souderton, Pa. O. J. Moyer heads the company. J. Landis, Highland street, Souderton, is architect.

The John Wood Mfg. Co., Conshohocken, Pa., boilers, tanks, stacks, etc., has had plans prepared for rebuilding one of the shops recently destroyed by fire, comprising a one-story building, 92 x 200 ft. Bids will be taken at once.

The Sheldon Axle & Spring Co., Conyngham avenue, Scranton, Pa., manufactuer of automobile axles and springs, is planning for a two-story addition, 50 x 80 ft., to cost about $125,000, including equipment. The company is a subsidiary of the Spicer Mfg. Co., South Plainfield, N. J.

The Bethlehem Motors Corporation, Allentown, Pa., motor trucks, is considering expansion for the development of passenger automobiles.

The Allen Tire & Rubber Co., Allentown, Pa., has inaugurated construction on the first unit of its new two-story tire manufacturing plant, 60 x 130 ft., with electric power plant. Three other units of same size, approximately, will be erected at a later date. It is expected to have the first unit ready for operation in about four months. The company recently increased its capital stock from $1,000,000 to $2,500,000. Wilmer Dunbar is president.

The Ordnance Department, Washington, D. C., has taken over the former shell-loading plant of the Bethlehem Steel Co., Belcoville, near Atlantic City, N. J., including about 6000 acres, for a consideration of $447,000. No announcement has as yet been made as to whether the plant will be maintained as an ordnance depot, or disposed of as a complete works. The power plant is being dismantled. It is said that the purchase was effected to avoid the necessity for lease renewal, or removal of buildings and equipment at short notice. The Bethlehem company has retained about 14,000 acres in this section. Arrangements have been made by the Ordnance Department to maintain its plant at Morgan Station, near South Amboy, N. J., as a permanent works, and except for a few parcels of land, the site will be held intact.

New England

BOSTON, May 3.

The demand for machine tools in this market the past two weeks has dropped to proportions that make even the largest houses anxious for single orders, a condition which has not existed before in many months. It does not follow, however, that no business has been done, as the aggregate volume has been satisfactory. The bulk of sales, however, represents a cleaning up of specifications made earlier in the year and not new business. More individual orders have been placed by Connecticut and western Massachusetts consumers than by those in the eastern section of New England, but most of these were handled through New York. It is reported that machines bought earlier in the year for shipment to France are being applied to domestic orders, the inference being that original buyers are not anxious to take the tools because of labor and financial conditions in that country. One Worcester company has taken a 14 ft. boring mill intended for France, but otherwise this rumor cannot be substantiated. Insofar as New England consumers are concerned, no cancellations are reported. Prices on tools are strong.

Consumers appear more concerned about getting tools already booked than in placing orders for additional equipment. Deliveries are becoming more extended, especially from Western makers and some local dealers have not yet made deliveries on equipment ordered last November. New England tool makers state that Middle Western consumers are trucking equipment from Connecticut, western Massachusetts and Vermont rather than depend on uncertain railroad transportation. It is interesting to note that there has been a noticeable decrease in the demand for screw machine products. The call for high speed drills continues very heavy, one large manufacturer reporting 75 per cent of the business on its books being for that class of stock. This manufacturer is to give its entire attention to high speed drills, letting the carbon drill end of its business take care of itself. It estimates that its payroll for 1920 will exceed that for 1919 by about $1,250,000, but owing to inefficient labor the 1920 output will not be more than two-thirds of the 1919 production.

The General Electric Co., Lynn, Mass., continues to buy single lots of one and two machines, which in the aggregate has been an important market factor. The Federal Board for Vocational Education, Boston, has bought 17 14 in. x 6-ft. and three 13-in. x 6-ft. Flather engine lathes; 14 12-in. and 14-in. x 6-ft. Reed engine lathes; six 16-in. x 6-ft. and four 15-in. x 6-ft. South Bend lathes; one Lincoln type milling machine, one 16-in. Stockbridge shaper, one arbor press, in addition to chucks, attachments, etc., and a Whitcomb planer, the last from Government surplus stock. It has further inquiries out for a small amount of

equipment for its Holyoke school, on which it expects to close before long.

Additional drilling equipment has been bought by the American Bosch Magneto Corporation, Springfield, Mass., and the Sinclair Motors, of that city, gear hobbing equipment. The Worcester Stamped Metal Co., Worcester, Mass., has purchased Cincinnati universal millers, and the Greenfield Tap & Die Corporation, Springfield, Mass., Lucus boring mill equipment. The latter some time ago issued a large list, but apparently has decided to partially abandon it for the time being. A cotton mill machinery builder has contracted for several automatic screw machines for fall delivery and a New Haven manufacturer has taken a number of tools.

Equipment for the new Diamond Match Co.'s machine shop, Springfield, Mass., will be bought through New York. According to latest plans, the P. V. W. Automatic Machine Co., Fitchburg, Mass., will not build in Springfield, but will erect an addition to the Fitchburg plant instead. Requirements for this extension has been covered. Local machine tool interests have sold to the Boston Elevated Railway six wood-working tools. The Maine Central continues to purchase small tools, but other New England railroads have not yet come into the market. The Newport Naval Station has a number of inquiries out for miscellaneous tools and the Stevens-Duryea Co., Springfield, Mass., is about to close on two or three lathes.

The Philadelphia Electric Co. purchased another 10-ton crane in this market. Crane equipment is needed for the American Sugar Co.'s new Baltimore power plant, which is being built by Stone & Webster, Boston. Inquiries for several cranes by Vermont marble interests apparently have been abandoned. In fact, the local crane market appears to have again relapsed into dullness.

The Putnam Machine Works, Fitchburg, Mass., will install a sand mixer in its foundry, and has inquiries out for motor equipment.

Wilcox, Crittenden & Co., Middletown, Conn., marine hardware, has bought about 25 acres in Portland, Conn., on which it will eventually erect a large foundry. Its Mill Hollow foundry has more business than it can handle.

The Al. Fontaine Co., recently incorporated under Massachusetts laws, has leased quarters at Millbury, Mass., where it will soon install machinery and begin the manufacture of automobile parts under the direction of A. C. Fontaine.

A permit has been issued to the Brightwood Bronze & Brass Foundry, Springfield, Mass., for an addition to its plant on Birnie Avenue, to cost approximately $10,000.

The Jamcap Rim Tool Corporation, Boston, capitalized for $250,000, has been incorporated under Massachusetts laws. It is operating a small plant at 39 Hancock Street, but intends to move into larger quarters at an early date. Moses Caplan, 77 Bedford Street, is president.

Stevens-Duryea, Inc., Chicopee, Mass., automobiles, will erect three more buildings on its property in Willimansett, to cost approximately $400,000. Two structures will be 300 x 320 ft., of saw-tooth construction, and the other, a heat treating building, will be 60 x 270 ft.

The Federal Iron Works, Inc., First Street, East Cambridge, Mass., capitalized for $50,000, has taken out a Massachusetts charter. The company started as a private concern in a small way about a year and a half ago, but has grown considerably, and recently installed new equipment. It is the intention to further increase its output within the near future, but definite plans have not been perfected. Chester A. Merrifield is president, and A. Merton Rich, treasurer.

Landers, Frary & Clark, New Britain, Conn., cutlery, etc., owing to the high cost of labor, have decided not to build this year the six-story aluminum shop contemplated.

Preliminary work on the new plant of the New England Trussed Steel Co., Natick, Mass., has begun.

Plans have been drawn for an addition to one of the plants of the American Wringer Co., Woonsocket, R. I., and work is expected to start within a short time.

Work on the two-story, 20 x 150 ft. and the one-story 50 x 100 ft. buildings of the Bridgeport Screw Co., Bridgeport, Conn., wire mill department, is well under way and operations are expected to begin this summer.

Hubbell Harvey Co., Bridgeport, Conn., guards, electric lamps, reflectors, switches, etc., has decided not to build at this time the four-story plant, 60 x 225 ft., which was in contemplation.

The Fairmont Foundry, Woonsocket, R. I., is adding to its plant on Mason Street another ell of wood and cement to increase its casting space.

The Fales & Jenks Machine Co., Pawtucket, R. I., has awarded a contract to the Willmarth-Mackillop Co., Inc., Pawtucket, for a three-story addition, 45 x 80 ft., to cost about $40,000.

The Worcester Tire Fabric Co., 98 Union Street, Worcester, Mass., manufacturer of automobile tires, has awarded contract to the E. D. Ward Co., 82 Foster Street, for a four-story, reinforced concrete addition, 75 x 125 ft., to cost about $150,000, including equipment.

The Clark Brothers Bolt Co., Inc., Milldale, Conn., has increased its capital stock from $400,000 to $600,000.

The Rhode Island Malleable Iron Works, Hillsgrove, R. I., has increased its capital stock to $1,000,000. It will build a one-story foundry addition, 56 x 90 ft., to cost about $35,000.

The Far-Operative Valve Co., Darien, Conn., has been incorporated in Delaware with a capital stock of $200,000 by Eugene E. Allison, G. Arnold Moses, and Harvey T. Andrews, Darien, to manufacture valves and similar products.

The New Haven Special Machinery Co., New Haven, Conn., has filed notice of dissolution.

The Palmer Foundry & Machine Co., Palmer, Mass., is planning to rebuild its plant recently destroyed by fire, with a loss of about $100,000. It is proposed to increase the capacity of the former works.

Butterfield & Co., Derby Line, Vt., have awarded a contract to J. J. Power, 15 Ashland Street, Worcester, Mass., for a three-story addition to its tap and die manufacturing plant, 65 x 200 ft., to cost about $100,000.

The Phoenix Pattern & Model Mfg. Co., Hartford, Conn., recently incorporated with a capital stock of $50,000, to manufacture mechanical patterns, etc., has been organized with J. J. O'Connor, Bloomfield, as president, and G. H. Newman, 23 Bushnell Street, Hartford, as secretary and treasurer.

R. G. Carle, 384 North Main Street, Woonsocket, R. I., has filed plans for a one-story machine shop on Park Avenue.

The Bethlehem Shipbuilding Corporation, Quincy, Mass., has completed plans for a three-story mechanical shop at its Fore River shipyard, 50 x 220 ft., to cost about $75,000.

The Hartford Iron Works, East Hartford, Conn., has plans under way for a temporary plant on a site at Wethersfield, recently acquired. Three buildings will be erected, including two one-story structures 60 x 100 ft., and 20 x 30 ft., and a two-story building, 30 x 30 ft. These will be used pending the erection of permanent works to replace the East Hartford Meadow plant recently burned. W. A. Clinton is president.

The Scovill Mfg. Co., East Main Street, Waterbury, Conn., manufacturer of brass and bronze products, etc., has filed plans for an addition to cost about $15,000.

The Sessions Clock Co., Forestville, Conn., has awarded contract to the Torrington Building Co., Torrington, for a two-story building, 50 x 75 ft.

Henley & Kimball, 380 Forest Avenue, Portland, Me., are arranging for the erection of a four-story plant, 100 x 100 ft., for the manufacture of automobile parts and equipment, to cost about $105,000. F. A. Rumery & Co., 21 Portland Street, are the architects.

The Trimont Mfg. Co., 55 Armory Street, Roxbury, Mass., manufacturer of pipe wrenches, etc., has awarded contract to the Holt-Fairchild Co., 248 Boylston Street, Boston, for a three-story addition, 43 x 240 ft., to cost about $100,000.

Buffalo

BUFFALO, May 3.

The American Brass Co., 446 Military Road, Buffalo, manufacturer of brass and copper sheets, etc., is arranging for the immediate erection of a one-story addition, 165 x 650 ft., to cost about $600,000. It is expected to increase the capacity of the plant about 25 per cent and give employment to 500 additional men. Headquarters of the company are at Waterbury, Conn. F. M. Wills is vice-president.

The Bering Steel Foundry Co., Morris Street, Buffalo, is planning for the erection of two one-story additions to cost about $25,000.

The Hewitt Rubber Co., 240 Kensington Avenue, Buffalo, manufacturer of air-brake hose and heavy rubber specialties, has completed plans for a one-story reinforced-concrete addition, 40 x 125 ft.

The Dick Stamping Machine Co., Buffalo, recently organized with a capital stock of $50,000 to manufacture metal stamping devices, etc., has acquired a site at 500 Genesee Street for its proposed plant, construction to begin at an early date. W. Dick, E. A. Jones and E. T. Owen, 28 Tremaine Avenue, Kenmore, head the company.

The Morris Hardware Corporation, Lockport, N. Y., has been incorporated with a capital stock of $60,000 by W. J.

Hoffmaster, B. O. Seitz and F. D. Morris, to manufacture hardware specialties.

The Kam-Kaderbeck Co., Inc., 967 Main Street, Buffalo, has awarded contract to Bellanca & Sorge, Morgan Building, for a two-story automobile service building at 1118-24 Main Street, to cost about $80,000.

The Atlas Crucible Steel Co., Dunkirk, N. Y., has filed notice of reorganization with an active capital of $5,500,000. It is planning for the erection of a number of additions to its plant to cost in excess of $1,000,000.

The Vulcan Rubber Co., Marine Bank Building, Erie, Pa., has had plans prepared for a two-story building on West Lake Road, 60 x 120 ft.

The Erie Motor Truck Co., Commerce Building, Erie, Pa., has awarded a contract to S. M. Stade, Palace Hardware Building, for a one-story plant in the Wesleyville section, 60 x 350 ft., to cost about $125,000.

The Erie Foundry Co., Twelfth Street, Erie, Pa., is completing plans for a two-story and basement addition, 40 x 70 ft., to cost about $50,000.

The G. H. Williams Co., Harbarger Lane, Erie, Pa., manufacturer of derricks, buckets, etc., will build a two-story addition, 64 x 82 ft., to cost about $40,000. G. H. Williams is president.

The Dittmer Gear & Mfg. Co., Lockport, N. Y., manufacturer of automobile transmission systems, etc., has filed notice of reorganization with an active capital stock of $159,500.

F. Dorries & Son, 471 Ellicott Street, Buffalo, manufacturer of brass products, has had plans prepared for a one-story machine shop, 25 x 80 ft.

The Buffalo Precision & Foundry Co., Buffalo, recently organized with a capital stock of $100,000 to manufacture automobile parts and similar specialties, is arranging for its proposed new plant at Westshore and Wix Avenues. W. G. Pennypacker, Mutual Life Building, heads the company.

The H. H. Franklin Mfg. Co., 302 South Geddes Street, Syracuse, N. Y., manufacturer of automobiles, is arranging for an increase in its capital stock from $7,000,000 to $40,000,000 to provide for proposed expansion.

The M. L. Oberdorfer Brass Co., Water Street, Syracuse, N. Y., has awarded a contract to the A. & T. Construction & Engineering Co., 115 South Salina Street, for a new plant on the Messina Springs Road, to cost about $500,000, including equipment.

The Batavia Specialty Co., Batavia, N. Y., manufacturer of sheet metal stampings, has been reorganized with an active capital stock of $44,000. It is considering plans for an addition to cost about $20,000.

Kable Brothers, Redwood, N. Y., will build a one-story machine shop and automobile repair works, 50 x 175 ft., to cost about $40,000.

The Tonawanda Power Co., Sweeney Building, North Tonawanda, N. Y., will build a one-story machine shop at 447 Robinson Street, to cost about $15,000.

The Eastman Kodak Co., Kodak Park, Rochester, N. Y., will build a new power plant to cost about $200,000, including machinery. A one-story works building will also be erected to cost about $10,000.

The Pratt Chuck Co., Frankfort, N. Y., is planning for the construction of an addition to its foundry at Oneida, N. Y.

Baltimore

BALTIMORE, May 3.

The Kelly-Springfield Tire Co., River Road, Cumberland, Md., with headquarters at Akron, Ohio, is having plans prepared for a three and four-story, brick and steel addition, to cost in excess of $1,500,000, including machinery. S. Diescher & Sons, Farmers' Bank Building, Pittsburgh, Pa., are the architects and engineers.

The city of Hagerstown, Md., is having plans prepared for a municipal electric power plant to cost about $300,000, with equipment. A. B. Grubmyer, 21 East Franklin Street, is the engineer in charge.

The Maryland Pressed Steel Co., Hagerstown, Md., a subsidiary of the Poole Engineering & Machine Co., Baltimore, has filed notice of a bond issue of $500,000.

The Union Shipbuilding Co., Fairfield, Md., is having plans prepared for a one-story addition, 45 x 75 ft., to cost about $12,000.

The Republic Belting Co., 2133 West Pratt Street, Baltimore, recently incorporated with a capital stock of $200,000, has acquired a site, 50 x 250 ft., for a plant. Harry J. Landback and William L. Henderson head the company.

The Baltimore Brick Co., Maryland Trust Building, Baltimore, has filed plans for a one-story machine shop, 25 x 116 ft., at Highland Avenue and Monument Street. Warren Griffis is manager.

The White Automobile Co., East Seventy-ninth Street, Cleveland, has awarded a contract to A. B. Gade, Atlanta, Ga., for a two-story service and repair building, 180 x 210 ft., at Atlanta, to cost about $200,000.

The Class-Arthur Brass & Foundry Co., Gastonia, N. C., recently organized to manufacture brass and iron products, is arranging for the erection of a local plant. Initial operations will be in the iron-working line, with later installation to include brass furnace and other brass-working equipment. K. M. Glass and J. A. Arthur head the company.

The Walker Machine & Foundry Co., Roanoke, Va., has broken ground for a one-story foundry, 60 x 100 ft., to cost about $15,000. Charles M. Walker is president.

The Boyle-Robertson Construction Co., Washington, D. C., has filed plans for the erection of a six-story automobile service and assembling plant at L and Fourteenth streets, to cost about $175,000.

A power plant, 87 x 150 ft., for works service will be erected by the Liggett & Myers Tobacco Co., Richmond, Va., in connection with an addition to cost about $350,000.

The J. F. Tice Co., LaGrange, Ga., recently incorporated with a capital stock of $25,000 to manufacture castings, will establish a plant in an existing building. J. F. Tice is president and H. W. Caudle, vice-president.

With $50,000 capital stock the Leonard Engineering Co., 711 American Building, Baltimore, has been incorporated to manufacture mechanical equipment and appliances for the combustion of fuel. The incorporators are John B. and Mary E. Leonard and Rose C. Campbell.

Work has been started by the Western Maryland Railway, Baltimore, on its new $1,000,000 coal pier, which will be equipped with a large electrically operated coal dumper.

The Berkeley Machine Works, Norfolk, Va., is planning to build a one-story boiler shop, to cost about $15,000.

The Bridges Machine Co., Florence, S. C., has been incorporated with a capital stock of $10,000 by T. H. Foss and W. H. Hudgins.

Plans for the construction of additional buildings and the installation of machine tools are being considered by the Greenville Iron Works, Greenville, S. C. W. L. Wilson is manager. The capital stock has been increased to $75,000.

Chicago

CHICAGO, May 3.

There is no denying that business has fallen off materially because of the transportation situation, but the amount of inquiry which continues to develop despite present adverse conditions is reassuring to those who have faith in the fundamental strength of the market. Prominent among prospective buyers are two railroads, the Rock Island which wants equipment for its Silvis, Ill., shops, and the St. Louis-San Francisco, which has issued a more extensive list, consisting in the main of the following tools:

One 5-ft. belt-drive radial drill.

One 32-in. stroke crank shaper with single pulley drive.

One 32-in. x 36-in. x 10-ft. belt-drive heavy duty planer.

One 27-in. x 14-ft. belt-drive selective head engine lathe.

One 22-in. x 8-ft. belt-drive selective geared head engine lathe.

One 15-in. x 8-ft. belt-drive selective geared head engine lathe.

One 2½-in. diameter capacity double-head bolt cutter.

One 100-ton capacity hydraulic bushing press.

One 53-in. vertical boring and turning mill; motor drive.

One belt-drive sensitive single spindle drilling machine.

One heavy duty power cut-off saw, belt drive.

One 90-in. heavy pattern driving wheel lathe.

One belt-drive No. 7 floor grinder.

One No. 7 motor-drive floor grinder.

One double end vertical geared punch with 36-in. throat and capacity to punch 1¼-in. diameter hole in 1-in. steel, and equipped to shear ⅝-in. plate or ⅞-in x 4-in. flat bar stock or 2-in. round bar; motor drive.

One hand-power forming roll suitable to form steel plate up to and including ⅜-in. in thickness.

One 2000-lb. steam hammer.

One 1000-lb. portable crane with cast steel base and roller bearing wheels.

One 3-ton chain hoist.

One 10-ton chain hoist.

Two compound steam drive two-stage feather-valve air compressors.

The following equipment is included in the Rock Island list:

One 100-ton heavy-duty driving wheel lathe, motor drive.

One 18-in. x 6-ft. belt-drive toolroom lathe.

One No. 3 belt-drive hot saw and burring machine.

One pipe threading and cutting off machine for 1-in. to 6-in. pipe, motor drive.

One 48-in. motor-driven vertical boring mill.

The Standard Oil Co., Whiting, Ind., is in the market for one 22-in. x 12-ft. motor-driven engine lathe; one 26-in. motor-driven sliding-head drill press; one 6000-lb. portable crane; one motor-driven cylinder grinder, and one motor-driven hack saw.

James G. Heggie & Sons, Joliet, Ill., are inquiring for two or more motor-driven punches with architectural jaws with capacity of 1¼ in. through 1 in. and throats ranging from 15 to 48 in.

Notable among recent purchases is an order by the Pullman Co. for two multiple drills representing a total outlay of nearly $11,000. One local dealer recently booked orders for four turret lathes and a 60-in. boring mill, three of the lathes being purchased by one buyer.

Reports from sellers indicate that new business in April averaged close to two-thirds of that booked in March. The total for May will, of course, depend largely on the railroad situation. In general, it may be said that transportation conditions have improved but little, although one or two dealers report a fair improvement. By keeping constantly in touch with the individual lines, it is found that shipments can be made. One seller reports that he is shipping at 50 per cent of normal, but other machinery houses are not doing so well. Motor trucks are being used extensively for local and nearby deliveries. While shipments are commencing to move, few deliveries from machine tool manufacturers are coming through. It has been found in some instances that freight forwarding companies could handle shipments from manufacturers when the ordinary railroad agencies proved incapable of doing anything.

Leading users of tools in this district are making desperate efforts to avoid closing, but many have been forced to curtail operations. Labor unrest is also being felt. A local shop, when presented with demands for $1 an hour for machinists and 80c. for helpers, closed its doors. In Rockford, Ill., the molders have struck and early reports from Cincinnati indicate that the threatened walkout of machinists has taken place. This latter strike may seriously affect machine tool production in that city.

A few more price advances have been made by tool builders, but nothing like a general rise has developed. Two lines of milling machines have gone up about 10 per cent each and a line of drill grinders and surface grinders has advanced. In general, standard types of machine tools are as high, and in most cases, higher than they were during the war. It is pointed out in this connection, however, that production costs are up to the war level, if not above it.

The Barco Mfg. Co., manufacturer of locomotive crossheads and other railroad supplies, 212 West Illinois Street, Chicago, has purchased the northwest corner of Ravenswood Park Avenue and Argyle Street and is constructing a one-story plant, 150 x 180 ft., to cost $100,000.

The Hurley Machine Co., West Twenty-second Street and South Fifty-fourth Avenue, Cicero, Ill., has let a contract for a two-story addition, 60 x 380 ft., to cost $100,000.

The Zeglen Tire & Rubber Co., recently incorporated with $500,000 capital stock, has bought from the Century Rubber Co. the three-story plant, 50 x 115 ft., on Rawson Street, near Wright Avenue, Chicago, where it will have a daily output of 860 tires.

The Henry M. Dudie La Pierre Co., manufacturer of automobile stearing wheels, 1314 West Twenty-first Street, Chicago, will receive bids through an architect on a two-story plant, 50 x 145 ft., Circle Avenue and Fourteenth Street, Forest Park, Ill., to cost $50,000.

The Illinois Malleable Iron Co., 1801 Diversey Boulevard, Chicago, has let contracts for a one-story galvanizing factory, 40 x 61 ft., 2846-50 North Ashland Avenue, to cost $20,000.

The Duvoal Ingraham Steel Co. has let contract for a one-story machine shop and foundry, 50 x 100 ft., 1750-52 Carroll Avenue, Chicago, to cost $25,000.

The Union Railroad Equipment Co., 332 South Michigan Avenue, Chicago, plans the erection of a foundry, 70 x 120 ft., to cost $125,000.

The Elgin Motor Car Co., 139 North Clark Street, Chicago, contemplates the construction of a foundry to cost $100,000.

The Gartland Foundry Co., Danville, Ill., will construct a gray iron foundry on the site of the former Chicago & Eastern Illinois railroad shops on Fairchild Street.

A. C. Wood & Co., Rockford, Ill., will construct a structural steel plant, 120 x 120 ft., on a five-acre tract on Harrison Avenue, adjoining the Chicago, Milwaukee & Gary yards. When the plant is completed the Wood company will abandon its present quarters on Pleasant Street.

The Sterling Washing Machine Co., De Kalb, Ill., hopes to commence operations in its plant now in course of construction about the first of July. At least 150 men will be employed.

The Fluid Compressed Steel Co., Keokuk, Iowa, plans the erection of a machine shop.

The Newton Foundry Co., Newton, Iowa, has purchased a site for a new foundry.

The Blackhawk Foundry & Machine Co., Davenport, Iowa, has filed articles of incorporation to conduct a general foundry and machine shop business. The authorized capital stock is $80,000. The officers are Walter K. Voss, president; Howard W. Power, vice-president; Henry W. Hubers, secretary, and Harry F. Voss, treasurer.

A. E. Lerberg and John Hoss, Fargo, N. D., have leased the radiator shop of the Moorhead Hardware Co. and will rebuild, repair and recore radiators.

The Edward Krantz Spring Co., Chicago, a Delaware corporation, has increased its capital stock from $500,000 to $2,750,000.

The Harrington & King Perforating Co., 614 North Union Avenue, Chicago, is taking bids for the erection of a one and two-story plant, 135 x 370 ft., at Taylor and Campbell streets, to cost about $200,000. J. M. Fuller is president.

The Kellogg Switchboard & Supply Co., Chicago, manufacturer of electrical equipment, with headquarters at 1066 West Adams Street, has increased its capital stock from $4,000,000 to $8,000,000.

The Robinson Motor Truck Co., 909 Hennepin Avenue, Minneapolis, Minn., is completing plans for a two-story service and repair works, 65 x 110 ft., at Seventeenth Street and Nicollet Avenue, to cost about $100,000.

The Sandusky Cement Co., Cleveland, Ohio, is having plans prepared for a one-story addition to its powerplant, 36 x 50 ft., at its works, Dixie, Ill., to cost about $100,000, including equipment.

The Woodford Electric Co., 118 North LaSalle Street, Chicago, manufacturer of electrical specialties, is arranging for the erection of a two-story plant, 44 x 120 ft., to cost about $25,000. M. D. Woodford is head.

In a recent issue in these columns it was stated that Philip Pfeil had purchased the plant of the Zouri Drawn Metals Co., Chicago Heights, Ill. This was an error. The machine shop only has been leased to Mr. Pfeil.

Cleveland

CLEVELAND, May 3.

The Universal Machine Co., Bowling Green, Ohio, will double the capacity of its forge shop by an additional building 80 x 100 ft. A heat-treating plant, 55 x 265 ft., will also be erected in which a grinding department will be installed.

The General Bronze Co., Cleveland, has been incorporated with a capital stock of $52,500 by R. H. Jamison, Cuyahoga Building, and others.

The Industrial Heating Mfg. Co., Cleveland, has increased its capital stock from $10,000 to $100,000.

The Bay View Foundry Co., Sandusky, Ohio, has increased its capital stock from $200,000 to $300,000 to provide for expansion.

The S. F. Bowser Oil Tank & Pump Works, Fort Wayne, Ind., will establish a branch plant in Hicksville, Ohio.

The Mansfield Lock Washer Co., Mansfield, Ohio, has increased its capital stock from $50,000 to $100,000.

The Toledo Milling Machine Co., Toledo, Ohio, has secured a permit for its new building, to be of concrete and steel, 80 x 200 ft.

Lucius Mfg. Co., Massillon, Ohio, has increased its capital stock to $500,000 and will build new plant.

Catalogs Wanted

The Cleveland Twist Drill Co., Cleveland, is revising its catalog library and desires catalogs and circulars of manufacturers illustrating any products in which it might be interested.

Pittsburgh

PITTSBURGH, May 3.

The Westinghouse Union Battery Co., Pittsburgh, recently organized by the Westinghouse interests, will manufacture storage batteries for all branches of industry. It is now occupying a portion of the works of the Union Switch & Signal Co., Swissvale, and is giving employment to about 500. Tentative plans include a new plant on a neighboring site to provide a daily capacity of over 3000 batteries. A. L. Humphrey, president Westinghouse Air Brake Co., is chairman of the board of directors; T. R. Cook, formerly chief engineer and production manager for the Willard Storage Battery Co., Cleveland, is vice-president and general manager.

The Motor Parts Corporation, Pittsburgh, a Delaware corporation, has increased its capital stock from $450,000 to $650,000.

The du Pont Powder Co., Fairchance, Pa., has awarded contract to the Dravo Contracting Co., Pittsburgh, for the erection of additions to cost about $50,000 to replace a section of the plant destroyed by fire.

The Troy Engine & Machine Co., Troy, Pa., is planning for a one-story and basement machine shop. G. W. Parsons is president.

The Twin Valley Motor Co., Johnstown, Pa., will soon call for bids for a two-story service building, 66 x 150 ft., to cost about $75,000.

The proposed plant of the Phelps Can Co., Lawrence Street, Baltimore, Md., at Clarksburg, W. Va., will be located on a 4½-acre site and will comprise several one and two-story buildings, with main factory 85 x 150 ft. Tin cans for food products will be the chief output. Walter J. Phelps is president and treasurer.

The B. H. W. Co., Charleston, W. Va., has been organized by C. D. Sines, D. C. Murphy and Clarence T. Pifer, to manufacture electrical machinery.

The Stewart Auto-Trailer Co., Du Bois, Pa., has been incorporated with a capital stock of $100,000 to manufacture automobile trailers, parts, etc. A. L. Orner, 500 Main Street, is treasurer.

The Fairmont Enameled Ware Co., Fairmont, W. Va., has been incorporated with a capital stock of $25,000 by Walter H. Finley, Carl Riggs and Frederick D. Cook.

Cincinnati

CINCINNATI, May 3.

Conditions in the machine tool industry are somewhat upset, on account of the strike of machinists for a 25 per cent increase in wages, although most of the shops are still running.

One of the largest lists received from the railroads for some time is that of the Norfolk & Western for its shops at Lynchburg, Winston-Salem, and Huntington. The list comprises 72 tools of various types, and aggregates hundreds of thousands of dollars. It is being figured on by local builders, and it is expected that much of the business will be placed in this district. The Hocking Valley Railroad has also issued a small list, and the Louisville & Nashville Railroad is buying some equipment. The Pennsylvania Railroad, which has been buying for its shops at Columbus, Ohio, Richmond and Logansport, Ind., has, it is understood, revised its list to some extent.

Local sales houses state that business is holding up very well, though not in such volume as was apparent in the earlier months of the year. Deliveries on machine tools are so far behind in some cases that buyers are becoming discouraged, and are trying to get along with equipment they have rather than wait several months for new tools. On the other hand, many orders are being placed with manufacturers who will not guarantee delivery this year.

The Conway Clutch Co., Cincinnati, has been incorporated with a capitalization of $25,000. It is a subsidiary of the Conway Machine Tool Co., and will manufacture a clutch recently invented by one of the members of the company.

The Cincinnati Gear Co., Reading Road, Cincinnati, has increased its capitalization from $33,000 to $300,000 to take care of increased business. No extensions are contemplated for the present.

The Schacht Motor Co., Evans Street, Cincinnati, motor trucks, has increased its capitalization from $100,000 to $200,000, to take care of increasing business. While no extensions are contemplated at present its growing business may render further expansions necessary in the near future.

The Adams-Preston Co., Dayton, Ohio, has been incorporated with a capitalization of $10,000, by F. W. Adams, Sr., E. E. Adams, D. E. Preston and E. J. Preston, to manufacture tools, dies and other machine products.

The Union Motor Car Corporation, Eaton, Ohio, has been incorporated under the laws of the State of Delaware for $1,000,000, and the erection of a plant is contemplated to build motor cars. A. H. Christman, Eaton, is president.

The Franklin Tractor Co., Dayton, which is erecting a plant in Greenville, Ohio, will increase its capitalization from $300,000 to $2,000,000, the additional capital to be used for the erection of another building at Greenville. Work will start as soon as the first structure is completed.

The Hamilton Foundry & Machine Co., Hamilton, Ohio, has purchased the property of the Buckeye Drill & Lathe Co., formerly occupied by the Simplex Machine Co. The Hamilton company will erect an addition to its foundry and install two new cupolas.

The Security Metal Products Co., Cincinnati, has been incorporated with a capitalization of $100,000 by C. H. Longman, W. P. Anderson, Mark Orr, D. E. Longman, J. L. Loring and Arthur Bulware. It has acquired the property at the corner of Henry and Dunlap streets, which will be remodeled. Metal specialties will be manufactured.

The Lima Foundry & Machine Co., Lima, Ohio, has increased its capital stock to $550,000.

The Piqua Motor Sales Co., Main Street, Piqua, Ohio, will build a two-story service building and repair works, 50 x 110 ft., to cost about $75,000.

The Lunkenheimer Co., Cincinnati, Ohio, manufacturer of valves, steam specialties, etc., has awarded contract to the Fisher-DeVore Construction Co., Blyer Building, for a one-story addition to its foundry at Carthage, Ohio, 230 x 300 ft., to cost about $100,000.

The A-C Electrical Mfg. Co., Dayton, Ohio, is arranging for a new two-story plant on East Fourth Street, 100 x 250 ft., to cost about $150,000, including equipment. It recently increased its capital stock from $100,000 to $600,000. K. R. Jacoby is president.

The Elwood Myers Co., Springfield, Ohio, manufacturer of metal specialties, novelties, etc., will build a three-story addition, 80 x 80 ft., for the manufacture of small motors. It will cost about $75,000.

Detroit

DETROIT, May 3.

The Federal Motor Truck Co., Detroit, has purchased 60 acres three blocks west of Grand River on the Detroit Terminal railroad, to provide for future expansion. Construction on the new works will not begin for some time as the plans are not completed. Pending their completion, the immediate need for more manufacturing facilities will be cared for at the present plant on Federal Avenue by the erection of a new unit between the Michigan Central tracks and Federal Avenue. This will provide 60,000 to 70,000 additional sq. ft. of space. The new unit of 75,000 sq. ft. erected a year ago is not sufficient to care for the increase in business.

The Oliver Machine Co., Grand Rapids, Mich., is completing plans for a one-story foundry to cost about $50,000. The Henry M. Lane Co., Owen Building, Detroit, is architect.

The Hamilton Motors Co., Grand Haven, Mich., has increased its capital stock from $500,000 to $1,500,000. Adolf Pricken is president and W. G. Jarman, secretary, treasurer and general manager.

The A. J. Detlaff Co., 121 Lafayette Avenue, Detroit, manufacturer of iron castings, etc., is planning for the erection of a one-story foundry addition, 51 x 85 ft.

The Grand Rapids Textile Machinery Co., Division Avenue, Grand Rapids, Mich., will build a one-story addition, 80 x 115 ft., at Division Avenue and Seventh Street, to cost about $20,000.

The Oakland Motor Car Co., Pontiac, Mich., has awarded a contract to the DuPont Engineering Co., 435 Woodward Avenue, Detroit, for a two-story addition, 70 x 200 ft., to cost about $200,000.

The Richmond Foundry & Machine Co., Richmond, Mich., is having plans prepared for a new machine shop and foundry.

Dodge Brothers, Joseph Campau Avenue, Detroit, manufacturer of automobiles, will commence the immediate erection of a new eight-story brick and steel plant, 75 x 266 ft.

The Paige-Detroit Motor Car Co., Detroit, is planning for the early removal of its present machine shop to the new building now being completed on the site of its proposed new works, West Warren Avenue and the Detroit Terminal Railroad. At an early date a four-story build-

ing will be erected. A portion of the new machine shop will be equipped for motor and truck assembling, as well as testing. The vacated building will be utilized for increased capacity in the trimming and other departments. The company has a 50-acre tract for its new plant and the entire works will aggregate about 4,000,000 sq. ft. of manufacturing space.

The Clayton-Lambert Mfg. Co., 1380 Beaubien Street, Detroit, manufacturer of metal stampings, blow torches, etc., has awarded contract to the Wisconsin Bridge & Iron Co., Penobscot Building, for a one-story brick and steel addition, 210 x 300 ft., on Knodell Avenue, to cost about $300,000, including equipment.

The American Fork & Hoe Co., Cleveland, will make extensions and improvements in its plant on North Mechanic Street, Jackson, Mich., to cost about $15,000.

The Upton Machine Co., St. Joseph, Mich., is asking for bids through Davidson & Weiss, Chicago, on a one-story machine shop, 90 x 175 ft., to cost $40,000.

The Premier Warm Air Heater Co., Dowagiac, Mich., has commenced the construction of an addition.

The Flint Foundry Co., Marshall, Mich., is planning the erection of a $60,000 addition, 80 x 120 ft.

The Walcott Lathe Co., Jackson, Mich., is preparing plans for a two-story brick, steel and concrete addition, 60 x 150 ft., to be used as a drop forge plant. The cost is estimated at $150,000.

The Detroit Twist Drill Co. is to build an addition, 100 x 112 ft., at Fort Street and Fourteenth Avenue, at an estimated cost of $60,000.

The National Sheet Metal Works, Grand Rapids, has been incorporated to manufacture dust arresters and sheet metal products. C. M. Adler is president; J. Verstay, vice-president, and C. J. Heyboer secretary and treasurer.

The plant of the Grand Rapids Foundry Co. has been acquired by the Oliver Machinery Co., of Grand Rapids, and will be overhauled and reequipped.

The Hamilton Motors Co., Grand Haven, will double its manufacturing facilities as soon as factory units can be erected. The capital stock has been increased from $500,000 to $1,500,000. Adolf Pricken is president, Peter Van Zylon, vice-president, and W. G. Jarmin secretary-treasurer and general manager.

The General Metals Co., Detroit, is planning expansion and the purchase of additional equipment. The capital stock was recently increased from $100,000 to $250,000.

The Stroh Castings Co., Detroit, will erect a two-story factory unit at Chene and Gustin streets.

The Automobile Crank Shaft Corporation, 192 Piquette Avenue, Detroit, will build a one-story plant, 40 x 165 ft., at an estimated cost of $25,000.

The American Furnace & Foundry Co., Milan, Mich., has completed plans for a one-story brick and steel foundry, 75 x 200 ft., to cost $200,000.

The L. O. Gordon Mfg. Co., Muskegon, Mich., has awarded contracts for a one-story addition, 50 x 130 ft., to cost $25,000.

Milwaukee

MILWAUKEE, May 3.

The Globe Seamless Steel Tubes Co., Milwaukee, has increased its authorized capital stock from $500,000 to $1,000,000. The works at Thirty-seventh and Burnham streets have been undergoing material enlargement in the last six months and further improvements are contemplated. Lawrence Fitch, 425 East Water Street, is president and treasurer, and Frank J. O'Brien, general manager.

The Wetmore Reamer Co., 210 Sycamore Street, Milwaukee, manufacturer of reaming tools, has broken ground for a new machine shop on Twenty-seventh Street, near St. Paul Avenue. It will be 70 x 175 ft., one-story, of brick and concrete, with metal sash, and cost $42,000 without equipment. John L. Stanage, 144 Oneida Street, is general contractor. The new shop is expected to be ready about July 15. Equipment is now being purchased. Paul B. Rogers is president and treasurer.

The Milwaukee Woven Wire Works, 3014 Clarke Street, Milwaukee, has let contracts for a two-story brick and steel sash factory addition, 60 x 116 ft. Additional looms and other equipment will be installed. R. G. Marquardt is president and treasurer.

The Werner Machine Co., Milwaukee, has been incorporated with a capital stock of $25,000, to manufacture railroad supplies and tools. The incorporators are A. W. Tabbert, Stanislaus Fabranski and F. A. Gardner, 7521 Scott Street.

The Universal Motor Co., Oshkosh, Wis., manufacturer of gas engines, electro-generating units, etc., has engaged Julius F. Dreger, local architect, to design its proposed new machine shop, 150 x 200 ft., and assembling shop, warehouse, shipping room, etc., three stories, 150 x 75 ft. The investment will be about $275,000. Equipment is being purchased. E. H. Fahrney is treasurer.

The Richards Machine Co., 3417 Vliet Street, Milwaukee, which recently incorporated with a capital stock of $60,000, is awarding contracts this week for a one-story brick and concrete machine shop addition, 60 x 100 ft. The work is in charge of Leenhouts & Guthrie, local architects.

The North Milwaukee Foundry Co., North Milwaukee, Wis., made the initial heat in its new gray iron foundry on April 24, and is now producing 13 to 15 tons daily of gray iron and semi-steel castings. Additional capacity is being provided by the erection of an extension to the cupola room and molding floor. Joseph Ewens is president.

The Milwaukee Ice Machine Co., 1001 Cold Spring Avenue, Milwaukee, which contemplated the erection of a new foundry and machine shop, has purchased the West Allis works of the Steam Appliance Co. at Sixty-third Avenue and Burnham Street, for a consideration of $110,000. It will continue the manufacture of steam appliances in addition to its line of self-contained refrigerating units, and will erect machine shop extensions during the year. H. T. Schroeder is president.

The Wausau Abrasives Co., Wausau, Wis., has broken ground for a one-story brick and concrete factory, 60 x 200 ft., which will be equipped for crushing mineral rock and the manufacture of grinding wheels, sandpaper and other abrasive specialties. J. K. Sawyer is general manager.

The West Bend Aluminum Co., West Bend, Wis., has awarded the general contract to the Northern Construction Co., Milwaukee, for a three-story extension, 60 x 100 ft., and a warehouse addition, to cost about $100,000, including equipment, most of which has been placed.

The Kenosha Wheel & Axle Co., Kenosha, Wis., has moved its works into the plant at Winthrop Harbor, Ill., formerly occupied by the Winther Motor Truck Co., now in its new factory at Kenosha. J. A. Whitcomb has retired as president and is succeeded by Martin P. Winther; Henry Lindskow is secretary and treasurer, and Ben Jensen, vice-president, in charge of the manufacturing division.

The International Steel Products Co., Hartford, Wis., which heretofore has devoted its attention to making mufflers or silencers for gas engines, is putting into quantity production a new type of pressed steel fuel tank for motor vehicles.

The Vulcan Mfg. Co., Fond du Lac, Wis., contemplates the erection of a $30,000 addition to its foundry, machine shop and structural iron works.

The Lavine Gear Co., Keefe Avenue, Milwaukee, will erect a one-story addition, 25 x 153 ft., to its main machine shop. The architects are Kirchhoff & Rose, Majestic Building. The company manufactures steering gears and other automotive parts and materials.

The Christensen Engineering Co., 425 East Water Street, Milwaukee, has taken over the three-story building at Eighteenth Street and Fond du Lac Avenue, and is installing equipment for manufacturing a pneumatic starting mechanism for heavy duty gas engines, heretofore made under contract. The initial capacity will be 75 devices a day. Nels A. Christensen is president and chief engineer.

The Bulldog Tractor Co., Oshkosh, Wis., has taken an option on a site at Fond du Lac, Wis., and is planning to erect a small machine and assembling shop, 40 x 75 ft. Arthur H. Gruenewald is president.

The Evinrude Motor Co., 279-281 Walker Street, Milwaukee, has given the entire contract for designing, erecting and equipping its new works at Twenty-seventh and Lake streets to the Federal Engineering Co., 444 Milwaukee Street, Milwaukee. The project involves an investment of $500,000.

The Thilmany Pulp & Paper Co., Kaukauna, Wis., will erect a two-story brick and steel mill addition, 100 x 250 ft., according to private plans and contract. Considerable new paper and pulp making equipment is being contracted for.

The Badger Brass Co., 243-245 Lake Street, Milwaukee, which established a foundry six months ago, is planning to increase its capacity. Fred W. Busche and Albert Schultz are the principal owners.

The Paper Converting Co., capital stock $1,000,000, has been organized by paper and pulp mill owners of the Fox River Valley in Wisconsin to build a two-machine paper mill and converting plant at Niagara Falls, N. Y. Work will begin at once on a two-story brick, steel and concrete building, 110 x 350 ft. The officers are: M. A. Wertheimer, Kaukauna, Wis., president; F. J. Sensenbrenner, Neenah,

Wis., vice-president; Karl E. Stansbury, Appleton, Wis., treasurer; G. E. Giddings, Appleton, secretary.

The Consolidated Water Power & Paper Co., Grand Rapids, Wis., has engaged L. A. DeGuere, consulting engineer, to design, erect and equip a hydraulic power plant addition, 40 x 60 ft., costing about $64,000.

The Meehan Mfg. Co., Milwaukee, when the financing is completed, will be a $250,000 Wisconsin corporation of which 220,000 shares will be paid in in cash or its equivalent and the remainder in treasury stock. The company was formed to manufacture patented acetylene farm lighting and cooking plants. It has started with a production of approximately 50 plants a month, which will be increased from time to time. Willis J. Meehan is the president and principal backer, and is also vice-president of the Brush Creek Mining Co., a $250,000 Wisconsin corporation.

The Central South

ST. LOUIS, May 3.

The Valley Electric Co., Arcade Building, St. Louis, manufacturer of electrical specialties, has broken ground for two one-story buildings, 50 x 200 ft., and 32 x 80 ft., at South Kings Highway and Connecticut Streets, to cost about $120,000. S. A. Whiten is president.

Darius Brown & R. C. Adams, Keith & Perry Building, Kansas City, Mo., have broken ground for a one-story plant, 50 x 125 ft., at 1606 Cherry Street, for the manufacture of automobile bodies.

The St. Joseph Structural Steel Co., St. Joseph, Mo., has completed plans for a one-story addition, 100 x 180 ft., with extension, 40 x 100 ft., to cost about $125,000, including equipment.

The Keystone Driller Co., Beaver Falls, Pa., well-drilling machinery, pumps, etc., has awarded a contract to the Concrete & Steel Construction Co., Joplin, Mo., for a one-story addition to its Joplin works, 125 x 140 ft.

The Thomas Cox & Sons' Machinery Co., Little Rock, Ark., has increased its capital from $100,000 to $150,000.

The Lime Stone Products Co., Black River, Ark., capital stock $100,000, is in the market for machinery for the development of its quarries. John T. Woodruff, Springfield, Mo., is president and J. E. Hollingsworth, Memphis, Tenn., general manager.

The Falcon Mfg. Co., St. Louis, 900 Title Guaranty Building, E. L. De Winter, manager, is in the market for milling machines, lathes, etc., for the manufacture of internal combustion motors.

Heatly Brothers, Mangum, Okla., are in the market for $40,000 of machinery to re-equip their cotton gin mill, recently burned.

The Wood & Lane Co., St. Louis, is reported in the market for a horizontal automatic steam engine and a 25 to 30-kw., 250 volt direct current generator, direct connected to a horizontal automatic steam engine.

The Arkansas Brick & Tile Co., Little Rock, Ark., is in the market for two 300 to 350 hp. boilers.

The F. H. Lynch Tire & Rubber Co., Carthage, Mo., will equip a plant, 60 x 350 ft., to make auto tires.

The Frank Adam Electric Co., St. Louis, manufacturer of switchboards, panels and other electrical equipment, is building an addition 147 x 190 ft.

R. V. Board, president Kentucky Wagon Mfg. Co., Louisville, has purchased eight acres and has plans for larger foundries and machine shops for increasing the production of automobiles and trucks. No list of equipment has yet been issued.

B. F. Avery & Sons, implement manufacturers, Louisville, will increase its capital stock, $2,000,000 of the new issue to be used for expansion.

The Buzz Engineering Co., Louisville, Ky., which recently bought a number of machine tools in this market, is understood to be contemplating the purchase of additional equipment. It manufactures gravity conveyors, and in addition does a general machine shop business.

The Ashland Foundry & Machine Works, Ashland, Ky., is planning to rebuild its plant recently destroyed by fire. C. F. Weaver is manager.

The Gulf States

BIRMINGHAM, May 3.

The Concrete Steel Co., Brown-Marx Building, Birmingham, Ala., is arranging for the erection of a new plant to cost about $150,000, including a one-story machine shop, 75 x 200 ft. An electric traveling crane will be installed. William Piez is local manager.

The Menges Motor Co., Greenville, Miss., has been incorporated with a capital stock of $1,000,000 by A. C. Menges, Memphis, Tenn.; J. A. Hunt, Greenville, and B. B. Payne, Winterville, S. C., to manufacture automobile trucks. It is planning for the establishment of local works with a total capacity in excess of 1500 trucks a year.

The A. & J. Mfg. Co., Gadsden, Ala., has perfected arrangements for a new plant to manufacture stoves, castings, etc., comprising a foundry, 80 x 250 ft.; mounting and assembling works, 80 x 250 ft., and a smaller structure for general service. Otto Agricola is president.

The Johnson & Thompson Steel Co., Birmingham, is planning for the erection of an addition to cost about $20,000.

Fire, April 23, destroyed a portion of the shops of the Louisiana & Northern Railroad Co., Homer, La., with loss estimated at $50,000.

As a temporary plant for the manufacture of engines and parts, the Armstrong-Emley Crankless Engine Co., 109 Clay Street, Jacksonville, Fla., has leased about 8500 sq. ft. in the Union Terminal Building. Later it proposes to build a local plant. The company was recently incorporated with a capital stock of $2,500,000. F. H. Cooper is president.

Plans for the construction of additional facilities are under consideration by the Gadsden Car Works, Gadsden, Ala.

The Warrior Foundry & Machine Co., Tuscaloosa, Ala., will build a machine shop, 60 x 82 ft., and a foundry, 60 x 72 ft. Frank Roos is manager.

The Pedicord Motor Supply Co., Monroe, La., T. H. Peddicord, president and manager, will establish a plant and install electrically driven equipment for the manufacture of automobile accessories.

The Jahncke Dry Dock & Ship Repair Co., New Orleans, La., will equip a third dry dock with a lifting capacity of 6000 tons.

The Magnolia Cotton Mills Corporation, Magnolia, Miss., is reported in the market for about $50,000 worth of additional equipment.

The Long-Bell Co., Quitman, Miss., is in the market for an 80-ton locomotive, 180-lb. steam pressure.

The Crescent Machine Shop & Supply Co., Tampico, Mexico, is constructing a large machine shop designed for all kinds of repair work and the manufacture of oil field supplies.

The Pioneer Oil & Refining Co., San Antonio, has purchased the oil refinery of A. B. Slimp and associates at Somerset and will double the capacity.

The Garner Gin Co., Houston, has been incorporated with a capital stock of $250,000 to build and operate cotton gins. The incorporators are J. G. Garner, S. T. Gillespie and A. S. Mackenzie.

The Midland Brass Works, Fort Worth, has been incorporated with a capital stock of $50,000 by J. L. Boycott, W. B. Sloan and W. L. Jensen.

The Dallas Art & Novelty Co. will build a plant to cost $200,000 for the manufacture of advertising, art and novelty goods. C. W. Hawley, Dallas, is president.

The Atchison, Topeka & Santa Fe Railroad, with general offices in Chicago, plans to enlarge its shops at Albuquerque, N. M., at a cost of more than $1,000,000.

The Empresa de Fierro Galvanizado, S. A., Tampico, Mexico, has doubled its capital stock and will enlarge its plant for the manufacture of galvanized iron products. C. B. Brisbin, Tampico, is the principal stockholder.

California

LOS ANGELES, April 27.

The National Axle Co., San Jose, Cal., has taken bids for a new one-story plant in the old Luna Park district, 90 x 360 ft., to cost about $60,000. John Harnish is local manager.

The Bay Engineering Co., Market and Apgar streets, Oakland, is having plans prepared for a three-story shop at Fourth and Jefferson streets, to cost about $25,000.

The Diamond Gas Heater Co., Los Angeles, has been incorporated with a capital stock of $25,000 by A. B. Evans, Los Angeles; T. B. Key, Long Beach, Cal.; and Alfred Barstow, Alhambra, Cal., to manufacture gas heating equipment.

The Western Pipe & Steel Co., 444 Market Street, San Francisco, manufacturer of iron and steel products, has secured property at Phoenix, Ariz., for the establishment of a branch plant.

Edward J. Lewis, 306 Sacramento Street, San Francisco, has filed plans for a one-story, brick machine shop at 112-16 North Eddy Street, to cost about $8,000.

The Western Machine & Mfg. Co., Long Beach, has been incorporated with a capital stock of $25,000 by M. O. Harvey.

L. W. Green, G. F. Grant and William Farley, to manufacture machinery and parts.

The Globe Tool & Mfg. Co., 2605-7 Stephenson Avenue, Los Angeles, has been organized to manufacture tools and machinery. H. R. Francis heads the company.

The Certain-Teed Products Corporation, First National Bank Building, San Francisco, manufacturer of roofing, etc., is having plans prepared for a three-story brick and reinforced-concrete plant on Chesley Avenue, Richmond, Cal. Headquarters of the company are at St. Louis.

The University Apparatus Co., 2229 McGee Street, Berkeley, Cal., manufacturer of laboratory apparatus, precision equipment, etc., will build a new three-story works near Bancroft Way, to cost about $16,000.

The Gelly Machinery Co., 524 Mission Road, Los Angeles, has been organized to manufacture machinery and parts. A. Levin, 151 North Carondelet Street, heads the company.

The National Carbon Co., Eighth and Brannan streets, San Francisco, manufacturer of electrical specialties, has awarded contract to Hannah Brothers, 142 Sansome Street, for a one- and four-story, reinforced-concrete addition, 175 x 275 ft., to cost about $360,000.

The Metal Trades Foundry Corporation, Oak and Clement streets, Alameda, Cal., has filed plans for a one-story addition to cost about $8,000. A new electric station will also be erected.

The Southern Pacific Railroad Co., San Francisco, has completed plans for two new reinforced-concrete machine shops, to cost about $100,000, at Mojave, Kern County, and Indio, Riverside County, to be used for locomotive work. New engine houses will aslo be constructed at these points.

The Wilkinson Auto Parts Co., Los Angeles, has been incorporated with a capital stock of $40,000 by E. F. Wilkinson, and J. L. Benedict, to manufacture automobile parts and other metal products.

F. H. Brooks, Los Angeles, has had plans prepared by E. L. Mayberry, architect, 468 Pacific Electric Building, for a one-story machine shop and automobile repair works, 130 x 200 ft., on Western Avenue, near Third Street.

The Pacific Northwest

SEATTLE, April 27.

The Norway-Pacific Shipbuilding Co., Everett, Wash., has received contracts for seven oil tankers and six oil storage basins to cost approximately $20,000,000. Five tankers will be of 10,000 tons each and the other two 3500 tons each. The storage basins will have capacity of 300,000 bbl.

C. C. Howard, Grants Pass, Ore., will erect a new sawmill, with a daily capacity of 30,000 ft. Work will start immediately.

The Seattle Asbestos Factory, Seattle, has purchased a tract on Lake Union on which it will erect a plant, 50 x 200 ft., for the manufacture of asbestos products.

The Inland Empire Paper Co., Spokane, will expend about $100,000 in improvements at its Millwood plant during the year, which will increase the capacity 30 per cent. An additional paper machine and pulp grinding machinery will be installed. W. G. McNaughton is manager.

The two-story frame planing mill and mold loft of the Puget Sound Bridge & Dredging Co.'s shipbuilding plant, Seattle, was damaged by fire recently with a loss of $25,000. Considerable machinery was destroyed.

Marshfield Mill & Timber Co., Marshfield, Ore., recently incorporated for $50,000 by J. E. Montgomery, A. Y. Myers and B. S. Fisher, will erect a mill at Marshfield to have a daily capacity of 30,000 ft.

The White Pine Co., Baker, Ore., incorporated for $65,000, plans the construction of a two-story mill, which will have a daily capacity of 50,000 ft.

One of the mills of the Bunker Hill & Sullivan Mining Co., Kellogg, Idaho, was destroyed by fire recently, entailing a loss of $40,000. It is reported that it will be rebuilt.

Fire recently destroyed the blacksmith shop of the Harbor Navigation Co., Seattle, and also damaged the power plant. New equipment will be installed.

Indianapolis

INDIANAPOLIS, May 3.

The Anderson Foundry & Machine Co., Anderson, Ind., has awarded contract to Eshelman & Sons for an addition, 150 x 220 ft., to cost about $200,000.

The Marion Elston Battery Co., Marion, Ind., has been incorporated with $200,00 capital stock, to manufacture automobile accessories. The directors are Sidney W. Elston, Fred Bahr and Otto Bush.

The American Governor & Mfg. Co., Ltd., Anderson, Ind., has increased its capital stock from $35,000 to $70,000.

The G. M. Diehl Machine Works, Wabash, Ind., has increased its capital stock from $30,000 to $150,000.

The American Bearing & Die Casting Corporation, Indianapolis, Ind., has issued $250,000 of preferred stock, making the total capitalization $750,000.

The Haynes Automobile Co., Kokomo, Ind., has increased its capital stock from $2,500,000 to $4,000,000.

The Wabash Valley Mfg. Co., Perryville, Ind., has been incorporated with $5,000 capital stock, to conduct a foundry. The directors are Charles H. Cochran, Emil R. Jahna and Paul J. Hawkins.

The Service Motor Truck Co., Wabash, Ind., has increased its capital stock from $2,000,000 to $3,000,000.

The Oglesby Furnace Stove Co., Clinton, Ind., has changed its name to the Clinton Furnace Stove Co.

The Burn Oil Tractor Co., Warren, Ind., will soon commence the construction of a tractor plant, 40x 210 ft., on the north side of the Toledo, St. Louis & Western Railroad and the Warren fair grounds.

The Red Cross Mfg. Co. has purchased the plant of the Buck Handle Co., Bluffton, Ind., and will continue the manufacture of wind pumps and cider mills. The construction of a foundry and machine shop is contemplated.

The Eclipse Mfg. Co., Hammond, Ind., recently organized for the manufacture of gears, automobile parts, patent awning supporters, etc., has completed arrangements for a four-story plant, 76 x 129 ft., to cost $50,000, at Conkey Avenue and Blaine Street.

Canada

TORONTO, May 3.

Dealers report a brisk demand for machine tools, especially for single lots. Equipment for automobile plants and general foundry work head the list. Little improvement is noted in deliveries and those requiring equipment are compelled to wait from three to six months and in some cases longer. As a result the demand for second-hand machinery continues strong. Notwithstanding that present prices are considered high, quotations on certain lines have again advanced and there is no prospect of any softening tendency

The International Engineering Corporation, 95 King Street, East Toronto, will erect a foundry and machine shop at Waterloo, Ont. It has secured a 5-acre site, and will erect three one-story buildings, 50 x 100 ft., to manufacture a line of crude oil engines. A. M. Castle is president.

Fryer & Evans, architects, Home Bank Building, Hamilton, Ont., are preparing plans for the first unit of plant to be erected at Beamsville, Ont., for the Premier Tire & Rubber Co.

The Canadian Scale & Slicer Co., Bowmanville, Ont., will build an addition to cost about $50,000. J. L. Howard is manager.

J. Evans, architect, 30 Water Street North, Galt, will receive bids until May 15 for erection of machine shop, costing $25,000, for Elliot & Whitehall, Hobson Street, Galt.

The Callander Foundry Co., Crimea Street, Guelph, Ont., is having plans prepared for an addition to cost $7,000. H. B. Callander is manager.

The Canadian Westinghouse Co., Hamilton, Ont., will erect an addition to cost $25,000.

The Ford Motor Co. of Canada, Ltd., 680 Waterloo Street, London, Ont., will erect an addition to cost $100,000.

The Sydney Foundry & Machine Co., Sydney, N. S., plans improvements to its foundry to cost $8,000.

W. F. Vilas Co., Cowansville, Que., is having plans prepared by A. Kent, architect, Granby, Que., for the erection of a foundry to cost $50,000.

Alphonse Simard, 214 Fourth Avenue, Limoilou, Que., has been awarded the general contract for a foundry and factory to cost $50,000 for the Acme Mechanical Engineering & Boiler Works Co.

J. D. Young & Son, 835 College Street, Toronto, have the general contract for an addition costing $30,000 for the American La France Fire Engine Co. of Canada, Ltd., 195 Weston Road, Toronto.

The National Auto Supply Co., 1216 Dundas Street West, Toronto, is in the market for a small screw cutting lathe, about 10-in. swing by 2 or 3 ft. long.

Plans are being prepared for the erection of a malleable steel foundry at Three Rivers, Que., for the Mechanical Engineering Co., to cost $75,000. Mr. Ditchfield, care of the company, is engineer.

The Winnipeg Tool & Forge Co., Winnipeg, will build an addition and is in the market for machinery and equipment. Luther Holling, 54 Riverton Avenue, is managing director.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as ld from stores in New York City by merchants carry- g stocks.

As there are many consumers whose requirements are t sufficiently heavy to warrant their placing orders th manufacturers for shipment in carload lots from ills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes

ars:	Per lb.
Refined iron, base price	5.25c.
Swedish bars, base price	20.00c.
oft Steel:	
¾ to 1⅞ in., round and square	3.52c. to 5.25c.
1 to 6 in. x ⅜ to 1 in.	3.52c. to 5.25c.
1 to 6 in. x ¼ to 5/16	3.62c. to 5.25c.
ods—⅝ and 11/16	3.57c. to 5.05c.
ands—1½ to 6 by 3/16 to No. 8	4.22c. to 6.50c.
oops	5.57c. to 6.50c.
hapes:	
Beams and channels—3 to 15 in.	3.47c. to 5.25c.
ngles:	
3 in. x ¼ in. and larger	3.47c. to 5.25c.
3 in. x 3/16 in. and ⅛ in.	3.72c. to 5.60c.
1½ to 2½ in. x ⅛ in.	3.52c. to 5.90c.
1½ to 2¾ in. x 3/16 in. and thicker	3.47c. to 5.85c.
1 to 1¼ in. x 3/16 in.	3.52c. to 5.90c.
1 to 1¼ x ⅛ in.	3.57c. to 5.95c.
⅞ x ⅞ x ⅛ in.	3.62c. to 6.00c.
¾ x ⅛ in.	3.67c. to 6.05c.
⅝ x ⅛ in.	4.07c. to 6.85c.
½ x 3/32 in.	5.17c. to 7.55c.
ees:	
1 x ⅛ in.	3.87c. to 6.25c.
1¼ in. x 1¼ x 3/16 in.	3.77c. to 6.15c.
1½ to 2½ x 3/16 in. and thicker	3.57c. to 5.95c.
3 in. and larger	3.52c. to 5.30c.

Merchant Steel

	Per lb.
ire, 1½ x ½ in. and larger	5.00c. to 5.25c.
oe calk, ½ x ⅜ in. and larger	5.75c. to 6.00c.
old-rolled strip (soft and quarter hard)	12c. to 14c.
pen-hearth spring steel	7.00c. to 10.00c.
hafting and Screw Stock:	
Rounds	6.25c. to 7.00c.
Squares, flats and hex	6.75c. to 7.50c.
tandard cast steel, base price	15.00c.
est cast steel	20.00c. to 24.00c.
xtra best cast steel	25.00c. to 30.00c.

Tank Plates—Steel

	Per lb.
¼ in. and heavier	3.67c. to 5.50c.

Sheets

Blue Annealed

	Per lb.
Jo. 10	6.62c. to 8.00c.
Jo. 12	6.67c. to 8.05c.
Jo. 14	6.72c. to 8.10c.
Jo. 16	7.82c. to 8.20c.

Box Annealed—Black

	Soft Steel C. R., One Pass, per lb.	Wood's Refined, per lb.
Jos. 18 to 20	7.80c. to 8.80c.	——
Jos. 22 and 24	7.85c. to 8.85c.	9.80c.
Jo. 26	7.90c. to 8.90c.	9.85c.
Jo. 28	8.00c. to 9.00c.	10.00c.
Jo. 30	8.10c. to 9.10c.	——

No. 28, 36 in. wide, 10c. higher.

Galvanized

	Per lb.
Jo. 14	8.25c. to 10.00c.
Jo. 16	8.50c. to 10.25c.
Jos. 18 and 20	8.65c. to 10.40c.
Jos. 22 and 24	8.80c. to 10.55c.
Jo. 26	8.95c. to 10.70c.
Jo. 27	9.10c. to 10.85c.
Jo. 28	9.25c. to 11.00c.
Jo. 30	9.75c. to 11.50c.

No. 28, 36 in. wide, 20c. higher.

Pipe

Standard—Steel	Blk.	Galv.	*Wrought Iron*	Blk.	Galv.
⅛ in. Butt	—36	—19	¾-1½ in. Butt	—15	+ 5
¼-3 in. Butt.	—40	—24	2 in. Lap	— 7	+11
3½-6 in. Lap.	—35	—20	2½-6 in. Lap	— 9	+ 7
7-12 in. Lap.	—25	— 8	7-12 in. Lap	+ 2	+20

Steel Wire

BASE PRICE* ON No. 9 GAGE AND COARSER	Per lb
Bright basic	8.00c.
Annealed soft	8.00c.
Galvanized annealed	8.50c.
Coppered basic	8.50c.
Tinned soft Bessemer	10.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE	
High Brass Sheet	28¼c. to 29½c.
High Brass Wire	28¼c. to 29½c.
Brass Rod	26¾c. to 29 c.
Brass Tube	42½c. to 44½c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 29½c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
			Primes	Wasters
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb...	10.80	10.55
		90 lb...	10.90	10.65
		100 lb...	11.00	10.75
IC...$15.50	$13.25	IC...	11.25	11.00
IX... 17.75	15.25	IX...	12.25	12.00
IXX... 19.50	17.00	IXX...	13.25	13.00
IXXX... 21.25	18.75	IXXX...	14.25	14.00
IXXXX... 22.75	20.50	IXXXX...	15.25	15.00

Terne Plates

8-lb. Coating 14x20	
100 lb.	$9.35
IC	9.50
IX	10.50
Fire door stock	12.75

Tin

Straits pig	63c.
Bar	70c. to 80c.

Copper

Lake ingot	21c. to 22c.
Electrolytic	20c. to 21c.
Casting	19½c. to 20c.

Spelter and Sheet Zinc

Western spelter	10c. to 11c.
Sheet zinc, No. 9 base, casks	14½c. open 15c.

Lead and Solder*

American pig lead	10c. to 11c.
Bar lead	11c. to 12c.
Solder ½ and ½ guaranteed	43c.
No. 1 solder	40c.
Refined solder	36c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	90c.
Commercial grade, per lb.	50c.

Antimony

Asiatic	11¼c. to 11¾c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. 35c. to 38c.

Old Metals

The market is quiet and business very dull. Dealers' buying prices are as follows:

	Cents Per lb.
Copper, heavy and crucible	16.50
Copper, heavy and wire	16.00
Copper, light and bottoms	14.25
Brass, heavy	10.50
Brass, light	8.00
Heavy machine composition	16.00
No. 1 yellow brass turnings	10.00
No. 1 red brass or composition turnings	12.75
Lead, heavy	7.25
Lead, tea	5.50
Zinc	5.25